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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, Ca. 94105

September 30, 1992

Chemical Waste Management
RE: Overley's Pumping
John T. Van Gessel, Esq.
3003 Butterfield Road
Oak Brook, IL 60521

Re: Special Notice Letter
Hassayampa Landfill Superfund Site
Maricopa County, Arizona

Dear Sir or Madam:

The United States Environmental Protection Agency ("EPA") considers your company to be potentially responsible for contamination at the Hassayampa Landfill Superfund Site ("Site") in Maricopa County, Arizona and hereby requests your participation in forthcoming negotiations to conduct the final remedy for the Site. Under Section 107 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. § 9607 ("CERCLA"), responsible parties are liable for the cleanup of the Site, including all costs incurred by the government in responding to releases at the Site.

EPA, in conjunction with the Hassayampa Steering Committee ("HSC"), has conducted a Remedial Investigation/Feasibility Study ("RI/FS") at the Site. The RI/FS was released for public comment in June 1992 and contained various remedial action alternatives. After reviewing the public comments on the RI/FS, EPA selected the remedial action which is outlined in the Record of Decision ("ROD") for the Site issued on August 6, 1992. The remedial action selected in the ROD is to be implemented during the Remedial Design/Remedial Action ("RD/RA") period by the potentially responsible parties ("PRPs"). A copy of the ROD is enclosed for your reference.

EPA has determined that the use of the special notice procedures set forth in Section 122(e) of CERCLA, 42 U.S.C. Section 9622(e), may facilitate a settlement between EPA and the PRPs for this Site. Thus, in accordance with Section 122 of CERCLA, this letter triggers a sixty-day moratorium on certain EPA response activities at the Site. During this sixty-day moratorium period,

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Hassayampa Landfill Superfund Site
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you and the other PRPs are invited to participate in formal negotiations with EPA. The goal of these negotiation will be to arrive at settlement providing for the PRPs to conduct or finance the response activities required at the Site. The sixty-day negotiation moratorium will be extended for an additional sixty days if EPA determines that the PRPs have provided EPA with a good-faith offer to conduct or finance the RD/RA response activities. Should the negotiation moratorium be extended to 120 days, negotiations will conclude on or before January 28, 1993.

In an effort to assist you and the other PRPs in settlement negotiations, EPA has prepared the enclosed Non-Binding Preliminary Allocation of Responsibility (NBAR). This NBAR was prepared pursuant to Section 122(e)(3) of CERCLA, 42 U.S.C. Section 9622(e)(3), and as stated in that section, it is not binding upon EPA nor upon the PRPs. The NBAR was developed from EPA's waste-in list, which in turn was derived from hazardous waste manifests showing the disposal of hazardous substances at the Site.

The NBAR represents a proposed allocation of site costs among the generator and transporter PRPs at the Site. Because generators and transporters have significantly different considerations with regard to their potential responsibility for site costs, the two classes (generators and transporters) are treated separately in the NBAR. The allocation as between the class of generators and the class of transporters should be determined in discussions between representatives of the two classes, with EPA participation if appropriate.

If EPA and the potentially responsible parties reach a settlement within the 120-day period, the settlement will be embodied in a Consent Decree to be executed by each settling PRP and by EPA. A proposed Consent Decree and Scope of Work (SOW) are enclosed to assist you in developing a good-faith offer. This draft Consent Decree and SOW are not currently binding on EPA and are subject to revision and approval by EPA and the United States Department of Justice.

If EPA is unable to reach agreement with the potentially responsible parties within the 120-day period, EPA will take appropriate measures to ensure the implementation of the remedial action.

As indicated above, the sixty-day negotiation moratorium triggered by this letter is extended for an additional sixty days if the PRPs submit a good-faith offer to EPA. A good-faith offer to conduct or finance the RD/RA consists of **one** written proposal by the interested PRPs that demonstrates the PRPs' qualifications and willingness to conduct or finance the design, implementation, and monitoring of the remedy, and to reimburse EPA's past and future response costs.

In order for your proposal to be considered a good-faith offer, it must contain the following elements:

- ▶ A statement of the your willingness to conduct or finance the remedial action that is consistent with the ROD and proposed Consent Decree and that provides a sufficient basis for further negotiation;
- ▶ A demonstration of your technical capability to undertake the remedial action, including the identification of the firm(s) that may actually conduct the work or a description of the process by which the firm(s) will be selected;
- ▶ A statement of your willingness to reimburse EPA for past costs as well as the costs EPA would incur in overseeing your implementation of the remedial action;
- ▶ A response to the proposed Consent Decree. If your offer contemplates modifications to the proposed Consent Decree, please work from this Consent Decree and submit a version showing any modifications to it;
- ▶ A detailed statement of work or workplan identifying how you intend to proceed with the remedial action; and
- ▶ The name, address, and telephone number of the party who will represent you in negotiations.

In accordance with CERCLA, EPA has already undertaken certain actions and incurred unreimbursed costs of at least \$ 128,895.30 as of July 31, 1992, in response to conditions at the Site. EPA also anticipates expending additional funds for response activities at the Site, which may include a remedial action or oversight of a remedial action. In accordance with Section 107(a) of CERCLA, demand is hereby made for payment of the above amount plus any and all interest recoverable under § 107 or under any other provisions of law.

As indicated above, EPA anticipates expending additional funds for the RD/RA. Whether EPA funds the entire RD/RA or simply incurs costs by overseeing the parties conducting the response activities, you are potentially liable for all expenditures plus interest.

Interest on past costs incurred shall accrue from the date of this demand for payment or any earlier demand, whichever is earlier; interest on future costs shall accrue from date of expenditure, pursuant to CERCLA § 107(a), 42 U.S.C. § 9607(a). Interest rates are variable. The rate applicable on any unpaid amounts for any fiscal year is the same as is specified for interest on investments of the Hazardous Substance Superfund which

is determined by the Department of the Treasury.

EPA is not required by CERCLA to issue a written demand for recovery of prejudgment interest. However, the date a written demand is made may be used by a court in determining the date from which prejudgment interest begins to accrue.

In the event that you file for protection in the Bankruptcy Court, EPA reserves the right to file a Proof of Claim or Application for Reimbursement of Administrative Expenses against the bankrupt's estate.

If EPA does not receive your response within the sixty-day moratorium period, EPA will conclude that you do not wish to negotiate a resolution of your liabilities in connection with this response action and that you have declined any involvement in performing the response activities. However, you may be held liable by EPA under Section 107 of CERCLA for the cost of the response activities EPA performs at the Site. If a settlement cannot be reached and the PRPs elect not to implement the ROD, EPA may choose from among the following options in order to assure its implementation: EPA may issue a unilateral order to the PRPs under CERCLA § 106(a) to perform the work described in the ROD; EPA may fund the remedial action; EPA may pursue civil litigation against the PRPs, pursuant to CERCLA §§ 106(a) and 107(a), 42 U.S.C. §§ 9606 and 9607.

EPA encourages cooperation by your company with other parties potentially responsible for contamination at the Site, and believes that a PRP committee is the best vehicle with which to adequately conduct or fund work at this Site.

A number of PRPs at the Hassayampa Landfill Site have formed a Steering Committee which has retained common legal counsel. EPA expects the Hassayampa Steering Committee (HSC) to have a significant role in these negotiations. For information regarding the Hassayampa Steering Committee, please contact:

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Attorneys at Law
2929 North Central Avenue
Phoenix, Arizona 85012-2798
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Fax (602) 640-9050

To further assist you, we have enclosed the names and addresses of the PRPs who are receiving this letter.

If you have any technical questions regarding the Site or this letter please contact:

Special Notice Letter
Hassayampa Landfill Superfund Site
Page 5

Tom Dunkelman (H-7-1)
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105
(415) 744-2395

Please direct any legal questions to:

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U.S. Environmental Protection Agency, Region IX
Office of Regional Counsel, RC-3-3
75 Hawthorne Street
San Francisco, CA 94105
(415) 744-1332

My staff and I look forward to working with you during the coming months.

Sincerely,

Keith A. Takata

Keith A. Takata
Deputy Director for Superfund
Hazardous Waste Management Division

Enclosures:

Proposed Consent Decree
Record of Decision for Hassayampa Landfill Superfund Site
Scope of Work
Nonbinding Preliminary Allocation of Responsibility (NBAR)
List of Addressees

cc: Linda Pollock, Assistant Attorney General for the State of
Arizona
Anita Pritchard, Project Manager, Arizona Department of
Environmental Quality

**HASSAYAMPA LANDFILL
SPECIAL NOTICE LETTER
MAILING LIST**

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RE: Deer-O Paints & Chemicals
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Goettl Air Conditioning, Inc.
RE: Goettl Air Conditioning
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RE: Gould Foil Division
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RE: Standard Oil
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American National Can
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Tushar Shah, Director of Engineering
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RE: McGraw-Edison Intl. Metal
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RE: Gould, Inc.
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RE: Sperry Flight Systems
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**HASSAYAMPA LANDFILL SUPERFUND SITE
NON-BINDING PRELIMINARY ALLOCATION
OF RESPONSIBILITY**

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Submitted On:

September 28, 1992

The portion of this work prepared by the CEAT is being conducted on behalf of the Environmental Protection Agency's (EPA) National Enforcement Investigations Center (NEIC) under EPA contract 68-W0-0001.

**HASSAYAMPA LANDFILL SUPERFUND SITE
NON-BINDING PRELIMINARY ALLOCATION
OF RESPONSIBILITY**

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1.0 INTRODUCTION

In August 1991, EPA Headquarters Office of Enforcement, Superfund Division requested the National Enforcement Investigations Center's (NEIC) assistance in developing a Non-binding Preliminary Allocation of Responsibility (NBAR) from an existing transactional database. In October 1991, EPA Headquarters, in consultation with EPA Region IX, selected the Hassayampa Landfill site for the NBAR project.

NEIC assigned a portion of the NBAR project to the Contract Evidence Audit Team (CEAT-TechLaw), NEIC's evidence audit contractor. The CEAT was requested to develop computer programs which would revise the Hassayampa Landfill volumetric ranking prepared by the CEAT in 1988, and assist in the production of the NBAR. Bonnie Brödenfeld was designated as the CEAT Projects Coordinator, Steve Kupecz and Evan McGinley were designated as the CEAT Project Leaders, and John Engle was designated as the CEAT Computer Programmer. Development of the NBAR has been a cooperative effort between EPA Headquarters, EPA Region IX, NEIC, and the CEAT (the NBAR team).

This report contains the guidelines and assumptions used by the CEAT in the development of the original 1988 Hassayampa Landfill volumetric ranking as well as the procedures used by EPA Headquarters, EPA Region IX, NEIC, and the CEAT in developing the Hassayampa Landfill NBAR. Lastly, this report contains revised volumetric ranking summaries for both generators and transporters. The volumetric rankings are sorted by original volume, revised volume, and alphabetically by party name.

2.0 PROJECT PROCEDURES

PHASE ONE: DEVELOPMENT OF THE ORIGINAL VOLUMETRIC RANKING

The original 1988 Hassayampa Landfill volumetric ranking was used as the baseline for the NBAR. The 1988 volumetric ranking was developed independently of the 1987 "Ranking of Generators by Volume of Waste Disposed - Hassayampa Landfill Site" list. Below are summaries of guidelines and assumptions used by the CEAT in preparing the 1988 volumetric ranking.

Documentation

The waste transaction documents from which the information was initially extracted consisted primarily of Arizona Hazardous Waste Manifests (manifests). The manifests were compared to Manifest Logs and Facility Disposal Area Logs to confirm the accuracy of the transactions. Transactional information from manifests marked "Void" was not included in the volumetric ranking summaries used for the NBAR.

Generator/Transporter Names

The party name listed in the volumetric ranking was the name indicated on the documentation.

Quantities and Units

The total quantity of waste per transaction was converted to gallons using conversion factors listed in Appendix A.

Unit Conversion Factor

Unit conversion factors for each container type were used to change each transaction's waste volume to gallons (see Appendix A for a list of unit conversion factors).

The conversion factors were obtained from the Arizona Department of Health Services (ADHS) for the 1988 data. For units that were not found on the ADHS list, a conversion factor of one (1) or zero (0) gallon(s) was used, as determined by the EPA Region IX Toxics and Waste Management Division contact (now known as the Hazardous Waste Management Division) and by ADHS. During the data review process (see the Data Review section below), the EPA Region IX case team determined that the former zero conversion factors should be changed to a conversion factor of one gallon. This change affected the following container types: bag, carboy, carton, pad, and solvent. When these conversion factors are used in calculating the total waste contributed by a party, that party's entry in the volumetric ranking summary was marked with an asterisk (*).

When a manifest documented a transaction of empty container(s), the conversion factor assigned was 10% of that container type's volume. For example, an empty drum with a capacity of 55 gallons was assigned a conversion factor of 10% of 55 gallons, or 5.5 gallons. When this conversion factor was used in calculating the total waste contributed by a party, that party's entry in the volumetric ranking summary was marked with a plus sign (+).

Calculations

After quantities of waste for each transaction had been converted to gallons, the CEAT determined the total volume and relative percentage of waste contributed by each party, and the total volume of waste contributed by all parties (see Appendix B for the volumetric ranking calculations).

PHASE TWO: DEVELOPMENT OF THE NON-BINDING PRELIMINARY ALLOCATION OF RESPONSIBILITY

The following is a summary of the procedures conducted by the NBAR team in revising the 1988 Hassayampa Landfill volumetric ranking into an NBAR. All procedures were determined in consultation with the EPA project contacts.

Data Review

In December 1991, the 1988 volumetric ranking was reviewed by the CEAT to ensure that the guidelines used in preparing the original data were followed consistently. This resulted in the CEAT review of a sample of the 1988 data.

As a result of this initial review, only one revision was made. It was determined that the total volume attributed to AD&D Salvage and Disposal, Inc. (AD&D) should be changed from the 1988 volumetric ranking total of 1375.00 gallons, to a revised total of 3870.00 gallons. More specifically, when reviewing the manifest for one of the three AD&D transactions, the CEAT noted that the 55.00 gallons assigned to the transaction in 1988 was incorrect. This error was apparent because there was more specific waste quantity information indicated on the manifest for this transaction. The manifest indicated that forty-five 55-gallon drums and thirty 1-gallon drums were involved in the transaction. This revision and the change in the conversion factors (from zero to one gallon) resulted in a 2495.00 gallon increase in the volumetric total for AD&D.

During the December 1991 review and based on discussions with the EPA Region IX case team, it was also determined that the 82 FTW/FMS Electroplating Shop was actually a shop at Williams Air Force Base. The wastes previously attributed to the electroplating shop, therefore, were attributed to Williams Air Force Base.

Also during this review, the CEAT noted that several parties appeared more than once on the 1988 volumetric ranking. Based on discussions with the EPA Region IX case team, the CEAT combined the total volumes for parties which were duplicated by name on the volumetric ranking. For parties with similar but not identical name listings, the EPA Region IX case team determined which totals were combined.

One final change was made to the 1988 data during the December 1991 reviews. The EPA Region IX case team determined that the zero (0) conversion factors assigned to bags, cartons, and pads should be changed to a conversion factor of one (1) gallon.

In February 1992, the EPA Region IX case team requested that the CEAT conduct a second review of the 1988 data. This review focused on transactions in the database for which no date of disposal was recorded. The EPA Region IX case team suspected that the lack of a date of disposal indicated that no waste was disposed of at the landfill. In consultation with the EPA Region IX case team, the criteria for an incomplete transaction were determined to be those with a manifest having an incomplete hazardous waste facility section and a blank disposal date for the corresponding manifest log (log) entry.

The CEAT manually searched the log and identified 91 entries without disposal dates. The EPA Region IX case team recommended that the documents for these entries be reviewed. In each case, when the log's disposal date was blank, the hazardous waste facility section of the manifest was also blank or incomplete (no date and signature). The Region IX case team decided that these entries should be deleted from the data and, therefore, these waste quantities do not appear in the volumetric ranking.

Following the manual search of the log, the CEAT conducted a computer search of the database for entries without disposal dates. The computer search identified additional entries which, upon further review, represented the following transactions:

- Transactions for which the manifest was not marked "Void," and the log entry was marked "Void." The EPA Region IX case team regards the log as the determining factor as to whether the waste was considered delivered to the facility. These entries, therefore, were deleted from the data.
- Transactions for which the hazardous waste facility section of the manifest was incomplete, but the log indicated a disposal date. The EPA Region IX case team decided that these entries should remain in the data because the Log is considered the determining factor as to whether the waste was considered delivered to the facility.

This review of the manifests and disposal dates resulted in 97 entries being deleted from the 1988 data and, therefore, the deletion of the following parties from the volumetric ranking.

- Companies deleted from the Generator Volumetric Ranking

ADR Ultrasound dba Advanced Technology Laboratories
 Bud's Oil Service Inc.
 Green Genie Nursery
 Penn Athletic Products
 Perry Rehabilitation Center
 Pierce Aviation
 Southwest Ink Company

- Companies deleted from the Transporter Volumetric Ranking

Bud's Oil Service Inc.
 Pierce Aviation
 Southwest Ink Company
 Southwest Solvent

Determinations of Financial Non-Viability

NEIC conducted research on the financial viability of each party in the 1988 volumetric ranking. As a result of this research, the NEIC provided the CEAT a list of parties determined to be financially non-viable (see Appendix C for the financial viability analysis procedures utilized by NEIC). On May 15, 1992, based on their research, the Region IX case team provided the CEAT with an updated list of financially non-viable parties. This listing is of party names as they appeared on the 1988 volumetric ranking prepared by the CEAT. These parties were marked as non-viable in the CEAT database; their shares were reallocated to viable parties. Non-viable parties were marked in the volumetric ranking summary with a pound sign (#).

A-Able Cesspool & Septic Tank (transporter)
 AD&D Salvage and Disposal, Inc. (generator/transporter)
 Arizona Septic & Ind. Control (transporter)
 Fed Mart Corp. (generator/transporter)
 Gary Granger (transporter)
 Gilbert Nursery (generator)
 Jake's Indust. Waste & Septic (transporter)
 Jerry's Complete Pumping Svc. (transporter)
 LaJet, Inc.
 Megadyne Corporation (generator)
 Norm's Silver Dipper (transporter)
 Sahuaro Petroleum (generator)
 Techni Finish, Inc. (generator)

In addition to reallocating the shares for parties determined to be non-viable, the share of a transporter marked as "Not Indicated" was also reallocated. This share, referred to as an orphan share, was reallocated prior to reallocating the non-viable party shares.

EPA Region IX's Determinations of Liability

The EPA Region IX case team decided to remove certain parties from the 1988 volumetric ranking for the purposes of the NBAR. Wayne Oxygen Co., Inc., Union Carbide Corp. Linde Div., and Liquid Air Corp. of America (collectively "lime waste generators") are involved in litigation with the Hassayampa Landfill Steering Committee. The lime waste generators allege that the lime wastes which they sent to the site were not hazardous substances. Wayne Oxygen and Union

Carbide were previously sent notice letters by EPA; Liquid Air Corp. was not, as EPA had determined that general notice to Liquid Air Corp. was not appropriate based upon the pH stated on the manifests. Due to the pending litigation, the Region IX case team concluded that excluding the lime waste generators from the NBAR would avoid the possibility of a substantial unallocated share if they are found not liable. In the event that the lime waste generators are found liable, they will be subject to contribution claims by the settling PRPs.

Dave Fellars Dump Truck Svc. was a transporter in the 1988 data who exclusively transported lime wastes; Dave Fellars was deleted from the volumetric ranking along with the lime waste generators.

The Hassayampa Steering Committee's action against Velsicol Chemical Company has been dismissed, based upon a ruling that diphacinone, the active ingredient in rodenticide wastes sent to the Hassayampa Landfill by Velsicol, is not a hazardous substance under CERCLA. Velsicol was therefore removed from the volumetric ranking. As a result of Velsicol's deletion, their transporter, Parks & Sons Intermountain Inc., was also deleted from the volumetric ranking.

Region IX has received evidence that wastes attributed to Plymouth Tube Co. and Sola-Syntex were sent to another site, not to the Hassayampa Landfill. For this reason, the Region IX case team decided to remove these parties from the 1988 volumetric ranking used for the NBAR.

The Region IX case team also concluded that the potential liability of the State of Arizona as an operator of the landfill, which is alleged by the Hassayampa Steering Committee in litigation with the State, would not be considered in the NBAR. Region IX has sent a notice letter to the State of Arizona as a generator of manifested waste sent to the site by the State, but has not given notice to the State as an operator. As a result, the NBAR includes the Department of Public Safety of the State of Arizona as a generator, but alleged operator liability of the State is not taken into account here. This party's entry in the volumetric ranking summary was marked with a "@" symbol. Any settlement with the State based upon the NBAR would include a release for generator liability, but would not include a release for alleged liability as an operator.

In this NBAR, the generators and the transporters are considered as separate groups, with volume apportioned on a percentage basis within those groups. A final apportionment of liability for the Hassayampa site will include a determination of the relative shares to be assigned to each of these two groups, as well as the appropriate shares to be assigned to owners and operators of the site. This apportionment depends on factors not considered in this NBAR, and is left to the parties for resolution.

Summary of Data Review and Determinations of Liability Results

As a result of the review of the manifest's hazardous waste facility section and the manifest log (see page 3) and of Region IX's determinations of liability (see page 5), the following parties were deleted from the 1988 data and are no longer in the volumetric ranking.

- Companies deleted from the Generator Volumetric Ranking

ADR Ultrasound dba Advanced Technology Laboratories
Bud's Oil Service Inc.
Green Genie Nursery
Liquid Air Corp. of America
Penn Athletic Products
Perry Rehabilitation Center
Pierce Aviation
Plymouth Tube Co.
Syntex Ophthalmics
Southwest Ink Company
Union Carbide Corp., Linde Div.
Velsicol Chemical Company
Wayne Oxygen Co., Inc.

- Companies deleted from the Transporter Volumetric Ranking

Bud's Oil Service Inc.
Dave Fellars Dump Truck Svc.
Parks & Sons Intermountain Inc.
Pierce Aviation
Southwest Ink Company
Southwest Solvent
Union Carbide Corp., Linde Div.
Wayne Oxygen Co., Inc.

Software and Reports

To proportionally reallocate orphan shares, unallocated shares, and shares of financially non-viable parties, the CEAT developed computer programs which perform reallocation calculations (see Appendix D for the waste volume reallocation calculations).

Programs were also written to print the revised volumetric ranking summaries. The ranking summaries list each party's original contribution and demonstrate the impact of reallocation on each party's share. The ranking summaries provide the party name, original volume (from the 1988 volumetric ranking), the percentage of original total volume, the revised volume (after reallocation), and the percentage of revised total volume. The generator and transporter volumetric ranking summaries are sorted alphabetically by party name, by original volume, and by revised volume.

3.0 REVISED VOLUMETRIC RANKING SUMMARIES

HASSAYAMPA LANDFILL VOLUMETRIC RANKING SUMMARY
GENERATOR VOLUMETRIC RANKING BY ORIGINAL VOLUME

<u>GENERATOR</u>	<u>ORIGINAL VOLUME</u>	<u>PERCENT</u>	<u>REVISED VOLUME</u>	<u>PERCENT</u>
HONEYWELL INFORMATION SYSTEMS	885586.0000	42.0320	900552.2155	42.7423
DIGITAL EQUIPMENT CORP.	312275.5200	14.8213	317552.9100	15.0718
SPERRY FLIGHT SYSTEMS	113000.0000	5.3632	114909.6760	5.4539
GENERAL INSTRUMENTS CORP.	106500.0000	5.0547	108299.8274	5.1402
ITT COURIER	102485.2000	4.8642	104217.1781	4.9464
ITT COURIER PCB FACILITY	(91500.0000)	(4.3428)	(93046.3306)	(4.4162)
ITT COURIER TERMINAL SYSTEMS	(10795.2000)	(0.5124)	(10977.6366)	(0.5210)
ITT COURIER	(190.0000)	(0.0090)	(193.2110)	(0.0092)+
WESTERN ELECTRIC COMPANY	65220.0000	3.0955	66322.2042	3.1478
SHELL OIL COMPANY	57155.0000	2.7127	58120.9074	2.7586
INTEL CORPORATION	47300.0000	2.2450	48099.3600	2.2829
NATIONAL CAN CORP.	45175.0000	2.1441	45938.4479	2.1803*
ARIZONA PUBLIC SERVICE COMPANY	40324.0000	1.9139	41005.4670	1.9462
BEAN & COMPANY	25494.0000	1.2100	25924.8432	1.2305+
GTE COMMUNICATIONS	23512.7000	1.1160	23910.0596	1.1348
EMM SEMI, INC. (TEMPE)	(22031.1000)	(1.0456)	(22403.4209)	(1.0633)+
GTE COMMUNICATIONS	(1481.6000)	(0.0703)	(1506.6387)	(0.0715)*
CONTINENTAL CIRCUITS	21000.0000	0.9967	21354.8955	1.0136
W. A. KRUEGER	19260.0000	0.9141	19585.4899	0.9296
RINCHEM COMPANY	18620.0000	0.8837	18934.6741	0.8987+
U.S. GOVERNMENT	18366.2500	0.8717	18676.6357	0.8864
LUKE AIR FORCE BASE	(11700.0000)	(0.5553)	(11897.7275)	(0.5647)
UNITED STATES AIR FORCE	(3460.0000)	(0.1642)	(3518.4733)	(0.1670)
WILLIAMS AIR FORCE BASE	(2800.0000)	(0.1329)	(2847.3194)	(0.1351)
VETERAN'S ADMIN. MEDICAL CTR.	(400.0000)	(0.0190)	(406.7599)	(0.0193)
U.S.D.A. U.S. FOREST SERVICE	(6.2500)	(0.0003)	(6.3556)	(0.0003)
MEGADYNE CORPORATION	18000.0000	0.8543	0.0000	0.0000#
REYNOLDS METALS	14502.5000	0.6883	14747.5892	0.7000+
SOUTHWEST DISTRIBUTING CO.	12153.6000	0.5768	12358.9933	0.5866
AIRESEARCH MANUFACTURING CO.	11001.7400	0.5222	11187.6671	0.5310*
LAJET, INC.	10000.0000	0.4746	0.0000	0.0000#
SOUTHERN PACIFIC PIPELINES	10000.0000	0.4746	10168.9979	0.4826
ST. REGIS PAPER COMPANY	10000.0000	0.4746	10168.9979	0.4826
PHOENIX NEWSPAPERS, INC.	8980.0000	0.4262	9131.7601	0.4334
F & B MANUFACTURING COMPANY	7590.0000	0.3602	7718.2694	0.3663
ACTION CHEMICAL/MCKESSON CORP.	6000.0000	0.2848	6101.3987	0.2896
DEER-O PAINTS & CHEMICALS	6000.0000	0.2848	6101.3987	0.2896
STANDARD OIL CO.	6000.0000	0.2848	6101.3987	0.2896
BECHTEL POWER CORPORATION	5865.0000	0.2784	5964.1173	0.2831
FRAZEE PAINT & WALLCOVERINGS	5600.0000	0.2658	5694.6388	0.2703
MCGRAW-EDISON INTL. METAL PROD	4715.0000	0.2238	4794.6825	0.2276

* - Total includes waste amounts in containers that were converted to gallons.

+ - Total waste amounts are adjusted for empty containers, as set forth in Appendix A.

- These parties were determined to be financially non-viable.

(-) - Numbers surrounded by parentheses indicate waste volumes and percentages for subsidiaries or divisions of a parent. These amounts are already reflected in the parent's totals.

HASSAYAMPA LANDFILL VOLUMETRIC RANKING SUMMARY
GENERATOR VOLUMETRIC RANKING BY ORIGINAL VOLUME

GENERATOR	ORIGINAL VOLUME	PERCENT	REVISED VOLUME	PERCENT
UNION MANUFACTURING INC.	4590.0000	0.2179	4667.5700	0.2215*
TEXACO INC.	4500.0000	0.2136	4576.0490	0.2172
GILBERT ENGINEERING CO. INC.	4211.7600	0.1999	4282.9379	0.2033
ROGERS CORPORATION	4100.0000	0.1946	4169.2891	0.1979*
CHEVRON U.S.A.	4000.0000	0.1899	4067.5992	0.1931
CHEVRON U.S.A.	(2000.0000)	(0.0949)	(2033.7996)	(0.0965)
CHEVRON ASPHALT U.S.A.	(2000.0000)	(0.0949)	(2033.7996)	(0.0965)
AD&D SALVAGE AND DISPOSAL INC.	3870.0000	0.1837	0.0000	0.0000*#
GOULD FOIL DIVISION	3600.0000	0.1709	3660.8392	0.1738
SHERWIN WILLIAMS CO.	2750.0000	0.1305	2796.4744	0.1327
ITT CANNON ELECTRIC	2660.0000	0.1263	2704.9534	0.1284
ARIZONA PRECISION SHEET METALS	2400.0000	0.1139	2440.5595	0.1158
TIERNAY	2290.0000	0.1087	2328.7005	0.1105
TIERNAY MANUFACTURING CO.	(1210.0000)	(0.0574)	(1230.4487)	(0.0584)
TIERNAY CASTING DIVISION	(1080.0000)	(0.0513)	(1098.2518)	(0.0521)
ARIZONA HARD CHROME	2100.0000	0.0997	2135.4896	0.1014
AAMCO TRANSMISSIONS	2000.0000	0.0949	2033.7996	0.0965
ATLANTIC RICHFIELD COMPANY	2000.0000	0.0949	2033.7996	0.0965
GENERAL SEMICONDUCTOR INC.	2000.0000	0.0949	2033.7996	0.0965
KARLSON MACHINE WORKS INC.	2000.0000	0.0949	2033.7996	0.0965
GOULD INC.	1900.0000	0.0902	1932.1096	0.0917
DAN J. OBELE	1800.0000	0.0854	1830.4196	0.0869
SAHUARO PETROLEUM	1800.0000	0.0854	0.0000	0.0000#
GOETTL AIR CONDITIONING INC.	1500.0000	0.0712	1525.3497	0.0724
TECHNI FINISH INC.	1322.0000	0.0627	0.0000	0.0000#
ANOCAD PLATING	1210.0000	0.0574	1230.4487	0.0584
DUNN-EDWARDS CORPORATION	1000.0000	0.0475	1016.8998	0.0483
EASON & WALLER GRINDING CO.	1000.0000	0.0475	1016.8998	0.0483
MOGUL CORPORATION	858.0000	0.0407	872.5000	0.0414
ASHLAND CHEMICAL COMPANY	825.0000	0.0392	838.9423	0.0398
WESTERN DYNEX, INC.	825.0000	0.0392	838.9423	0.0398
HERMETIC REGRIGERATION	600.0000	0.0285	610.1399	0.0290
POWERINE OIL COMPANY	500.0000	0.0237	508.4499	0.0241
TREFFERS PRECISION INC.	500.0000	0.0237	508.4499	0.0241
MAACO AUTO PAINTING	492.0000	0.0234	500.3147	0.0237
BUD WEST	400.0000	0.0190	406.7599	0.0193
HUDDLESTON EQUIPMENT CO.	400.0000	0.0190	406.7599	0.0193
R.T. MFG. CO. INC./ALLIED INVESTMENT CORP.	400.0000	0.0190	406.7599	0.0193
ARIZONA DISTRIBUTION SERVICES	360.0000	0.0171	366.0839	0.0174
GOWAN COMPANY	356.0000	0.0169	362.0163	0.0172+
PRESTIGE APPARELMASTER	350.0000	0.0166	355.9149	0.0169

* - Total includes waste amounts in containers that were converted to gallons.

+ - Total waste amounts are adjusted for empty containers, as set forth in Appendix A.

- These parties were determined to be financially non-viable.

() - Numbers surrounded by parentheses indicate waste volumes and percentages for subsidiaries or divisions of a parent. These amounts are already reflected in the parent's totals.

HASSAYAMPA LANDFILL VOLUMETRIC RANKING SUMMARY
GENERATOR VOLUMETRIC RANKING BY ORIGINAL VOLUME

<u>GENERATOR</u>	<u>ORIGINAL VOLUME</u>	<u>PERCENT</u>	<u>REVISED VOLUME</u>	<u>PERCENT</u>
ROLAMECH COMPANY, INC.	330.0000	0.0157	335.5769	0.0159
FISHER HEAT TREATING INC.	300.0000	0.0142	305.0699	0.0145
ARIZONA TANK LINES	250.0000	0.0119	254.2249	0.0121
R. R. EVANS	250.0000	0.0119	254.2249	0.0121
AMERICAN PARTS SYSTEM	165.0000	0.0078	167.7885	0.0080
HELENA CHEMICAL COMPANY	141.0000	0.0067	143.3829	0.0068*
ARMOUR RESEARCH CENTER	129.0000	0.0061	131.1801	0.0062*
FARMERS AGDUSTRIES INC.	93.5000	0.0044	95.0801	0.0045+
RAMADA ENERGY SYSTEMS	40.0000	0.0019	40.6760	0.0019
BIO-LAB, INC.	36.0000	0.0017	36.6084	0.0017
AZ DEPT. PUBLIC SAFETY (CRIME)	24.1300	0.0011	24.5378	0.0012@
FED MART CORP.	15.0000	0.0007	0.0000	0.0000#
GILBERT NURSERY	8.0000	0.0004	0.0000	0.0000#
AMERICAN WAREHOUSE dba AMERICAN DISTRIBUTING CORP.	1.0000	0.0000	1.0169	0.0000
ADHS	0.6000	0.0000	0.6101	0.0000+
MOTOROLA, INC.	0.0000	0.0000	0.0000	0.0000
TOTALS:	2106934.5000	100.0000	2106934.5000	100.0000

* - Total includes waste amounts in containers that were converted to gallons.

+ - Total waste amounts are adjusted for empty containers, as set forth in Appendix A.

- These parties were determined to be financially non-viable.

@ - The alleged liability of the State of Arizona is not taken into account.

HASSAYAMPA LANDFILL VOLUMETRIC RANKING SUMMARY
GENERATOR VOLUMETRIC RANKING BY REVISED VOLUME

GENERATOR	ORIGINAL		REVISED	
	VOLUME	PERCENT	VOLUME	PERCENT
HONEYWELL INFORMATION SYSTEMS	885586.0000	42.0320	900552.2155	42.7423
DIGITAL EQUIPMENT CORP.	312275.5200	14.8213	317552.9100	15.0718
SPERRY FLIGHT SYSTEMS	113000.0000	5.3632	114909.6760	5.4539
GENERAL INSTRUMENTS CORP.	106500.0000	5.0547	108299.8274	5.1402
ITT COURIER	102485.2000	4.8642	104217.1781	4.9464
ITT COURIER PCB FACILITY	(91500.0000)	(4.3428)	(93046.3306)	(4.4162)
ITT COURIER TERMINAL SYSTEMS	(10795.2000)	(0.5124)	(10977.6366)	(0.5210)
ITT COURIER	(190.0000)	(0.0090)	(193.2110)	(0.0092)+
WESTERN ELECTRIC COMPANY	65220.0000	3.0955	66322.2042	3.1478
SHELL OIL COMPANY	57155.0000	2.7127	58120.9074	2.7586
INTEL CORPORATION	47300.0000	2.2450	48099.3600	2.2829
NATIONAL CAN CORP.	45175.0000	2.1441	45938.4479	2.1803*
ARIZONA PUBLIC SERVICE COMPANY	40324.0000	1.9139	41005.4670	1.9462
BEAN & COMPANY	25494.0000	1.2100	25924.8432	1.2305+
GTE COMMUNICATIONS	23512.7000	1.1160	23910.0596	1.1348
EMM SEMI, INC. (TEMPE)	(22031.1000)	(1.0456)	(22403.4209)	(1.0633)+
GTE COMMUNICATIONS	(1481.6000)	(0.0703)	(1506.6387)	(0.0715)*
CONTINENTAL CIRCUITS	21000.0000	0.9967	21354.8955	1.0136
W. A. KRUEGER	19260.0000	0.9141	19585.4899	0.9296
RINCHAM COMPANY	18620.0000	0.8837	18934.6741	0.8987+
U.S. GOVERNMENT	18366.2500	0.8717	18676.6357	0.8864
LUKE AIR FORCE BASE	(11700.0000)	(0.5553)	(11897.7275)	(0.5647)
UNITED STATES AIR FORCE	(3460.0000)	(0.1642)	(3518.4733)	(0.1670)
WILLIAMS AIR FORCE BASE	(2800.0000)	(0.1329)	(2847.3194)	(0.1351)
VETERAN'S ADMIN. MEDICAL CTR.	(400.0000)	(0.0190)	(406.7599)	(0.0193)
U.S.D.A. U.S. FOREST SERVICE	(6.2500)	(0.0003)	(6.3556)	(0.0003)
REYNOLDS METALS	14502.5000	0.6883	14747.5892	0.7000+
SOUTHWEST DISTRIBUTING CO.	12153.6000	0.5768	12358.9933	0.5866
AIRESEARCH MANUFACTURING CO.	11001.7400	0.5222	11187.6671	0.5310*
SOUTHERN PACIFIC PIPELINES	10000.0000	0.4746	10168.9979	0.4826
ST. REGIS PAPER COMPANY	10000.0000	0.4746	10168.9979	0.4826
PHOENIX NEWSPAPERS, INC.	8980.0000	0.4262	9131.7601	0.4334
F & B MANUFACTURING COMPANY	7590.0000	0.3602	7718.2694	0.3663
ACTION CHEMICAL/MCKESSON CORP.	6000.0000	0.2848	6101.3987	0.2896
DEER-O PAINTS & CHEMICALS	6000.0000	0.2848	6101.3987	0.2896
STANDARD OIL CO.	6000.0000	0.2848	6101.3987	0.2896
BECHTEL POWER CORPORATION	5865.0000	0.2784	5964.1173	0.2831
FRAZEE PAINT & WALLCOVERINGS	5600.0000	0.2658	5694.6388	0.2703
MCGRAW-EDISON INTL. METAL PROD	4715.0000	0.2238	4794.6825	0.2276
UNION MANUFACTURING INC.	4590.0000	0.2179	4667.5700	0.2215*
TEXACO INC.	4500.0000	0.2136	4576.0490	0.2172

* - Total includes waste amounts in containers that were converted to gallons.

+ - Total waste amounts are adjusted for empty containers, as set forth in Appendix A.

(-) Numbers surrounded by parentheses indicate waste volumes and percentages for subsidiaries or divisions of a parent. These amounts are already reflected in the parent's totals.

HASSAYAMPA LANDFILL VOLUMETRIC RANKING SUMMARY
GENERATOR VOLUMETRIC RANKING BY REVISED VOLUME

GENERATOR	ORIGINAL VOLUME	PERCENT	REVISED VOLUME	PERCENT
GILBERT ENGINEERING CO. INC.	4211.7600	0.1999	4282.9379	0.2033
ROGERS CORPORATION	4100.0000	0.1946	4169.2891	0.1979*
CHEVRON U.S.A.	4000.0000	0.1899	4067.5992	0.1931
CHEVRON U.S.A.	(2000.0000)	(0.0949)	(2033.7996)	(0.0965)
CHEVRON ASPHALT U.S.A.	(2000.0000)	(0.0949)	(2033.7996)	(0.0965)
GOULD FOIL DIVISION	3600.0000	0.1709	3660.8392	0.1738
SHERWIN WILLIAMS CO.	2750.0000	0.1305	2796.4744	0.1327
ITT CANNON ELECTRIC	2660.0000	0.1263	2704.9534	0.1284
ARIZONA PRECISION SHEET METALS	2400.0000	0.1139	2440.5595	0.1158
TIERNAY	2290.0000	0.1087	2328.7005	0.1105
TIERNAY MANUFACTURING CO.	(1210.0000)	(0.0574)	(1230.4487)	(0.0584)
TIERNAY CASTING DIVISION	(1080.0000)	(0.0513)	(1098.2518)	(0.0521)
ARIZONA HARD CHROME	2100.0000	0.0997	2135.4896	0.1014
AAMCO TRANSMISSIONS	2000.0000	0.0949	2033.7996	0.0965
ATLANTIC RICHFIELD COMPANY	2000.0000	0.0949	2033.7996	0.0965
GENERAL SEMICONDUCTOR INC.	2000.0000	0.0949	2033.7996	0.0965
KARLSON MACHINE WORKS INC.	2000.0000	0.0949	2033.7996	0.0965
GOULD INC.	1900.0000	0.0902	1932.1096	0.0917
DAN J. OBELE	1800.0000	0.0854	1830.4196	0.0869
GOETTL AIR CONDITIONING INC.	1500.0000	0.0712	1525.3497	0.0724
ANOCAD PLATING	1210.0000	0.0574	1230.4487	0.0584
DUNN-EDWARDS CORPORATION	1000.0000	0.0475	1016.8998	0.0483
EASON & WALLER GRINDING CO.	1000.0000	0.0475	1016.8998	0.0483
MOGUL CORPORATION	858.0000	0.0407	872.5000	0.0414
ASHLAND CHEMICAL COMPANY	825.0000	0.0392	838.9423	0.0398
WESTERN DYNEX, INC.	825.0000	0.0392	838.9423	0.0398
HERMETIC REGRIGATION	600.0000	0.0285	610.1399	0.0290
POWERINE OIL COMPANY	500.0000	0.0237	508.4499	0.0241
TREFFERS PRECISION INC.	500.0000	0.0237	508.4499	0.0241
MAACO AUTO PAINTING	492.0000	0.0234	500.3147	0.0237
BUD WEST	400.0000	0.0190	406.7599	0.0193
HUDDLESTON EQUIPMENT CO.	400.0000	0.0190	406.7599	0.0193
R.T. MFG. CO. INC./ALLIED INVESTMENT CORP.	400.0000	0.0190	406.7599	0.0193
ARIZONA DISTRIBUTION SERVICES	360.0000	0.0171	366.0839	0.0174
GOWAN COMPANY	356.0000	0.0169	362.0163	0.0172+
PRESTIGE APPARELMASTER	350.0000	0.0166	355.9149	0.0169
ROLAMECH COMPANY, INC.	330.0000	0.0157	335.5769	0.0159
FISHER HEAT TREATING INC.	300.0000	0.0142	305.0699	0.0145
ARIZONA TANK LINES	250.0000	0.0119	254.2249	0.0121
R. R. EVANS	250.0000	0.0119	254.2249	0.0121
AMERICAN PARTS SYSTEM	165.0000	0.0078	167.7885	0.0080

* - Total includes waste amounts in containers that were converted to gallons.

+ - Total waste amounts are adjusted for empty containers, as set forth in Appendix A.

(-) Numbers surrounded by parentheses indicate waste volumes and percentages for subsidiaries or divisions of a parent. These amounts are already reflected in the parent's totals.

HASSAYAMPA LANDFILL VOLUMETRIC RANKING SUMMARY
 GENERATOR VOLUMETRIC RANKING BY REVISED VOLUME

<u>GENERATOR</u>	<u>ORIGINAL VOLUME</u>	<u>PERCENT</u>	<u>REVISED VOLUME</u>	<u>PERCENT</u>
HELENA CHEMICAL COMPANY	141.0000	0.0067	143.3829	0.0068*
ARMOUR RESEARCH CENTER	129.0000	0.0061	131.1801	0.0062*
FARMERS AGDUSTRIES INC.	93.5000	0.0044	95.0801	0.0045+
RAMADA ENERGY SYSTEMS	40.0000	0.0019	40.6760	0.0019
BIO-LAB, INC.	36.0000	0.0017	36.6084	0.0017
AZ DEPT. PUBLIC SAFETY (CRIME)	24.1300	0.0011	24.5378	0.0012a
AMERICAN WAREHOUSE dba AMERICAN DISTRIBUTING CORP.	1.0000	0.0000	1.0169	0.0000
ADHS	0.6000	0.0000	0.6101	0.0000+
MOTOROLA, INC.	0.0000	0.0000	0.0000	0.0000
GILBERT NURSERY	8.0000	0.0004	0.0000	0.0000#
FED MART CORP.	15.0000	0.0007	0.0000	0.0000#
TECHNI FINISH INC.	1322.0000	0.0627	0.0000	0.0000#
SAHUARO PETROLEUM	1800.0000	0.0854	0.0000	0.0000#
AD&D SALVAGE AND DISPOSAL INC.	3870.0000	0.1837	0.0000	0.0000*#
LAJET, INC.	10000.0000	0.4746	0.0000	0.0000#
MEGADYNE CORPORATION	18000.0000	0.8543	0.0000	0.0000#
	-----	-----	-----	-----
TOTALS:	2106934.5000	100.0000	2106934.5000	100.0000
	=====	=====	=====	=====

* - Total includes waste amounts in containers that were converted to gallons.

+ - Total waste amounts are adjusted for empty containers, as set forth in Appendix A.

- These parties were determined to be financially non-viable.

a - The alleged liability of the State of Arizona is not taken into account.

HASSAYAMPA LANDFILL VOLUMETRIC RANKING SUMMARY
GENERATOR VOLUMETRIC RANKING BY GENERATOR NAME

<u>GENERATOR</u>	<u>ORIGINAL VOLUME</u>	<u>PERCENT</u>	<u>REVISED VOLUME</u>	<u>PERCENT</u>
AAMCO TRANSMISSIONS	2000.0000	0.0949	2033.7996	0.0965
ACTION CHEMICAL/MCKESSON CORP.	6000.0000	0.2848	6101.3987	0.2896
AD&D SALVAGE AND DISPOSAL INC.	3870.0000	0.1837	0.0000	0.0000*#
ADHS	0.6000	0.0000	0.6101	0.0000+
AIRESEARCH MANUFACTURING CO.	11001.7400	0.5222	11187.6671	0.5310*
AMERICAN PARTS SYSTEM	165.0000	0.0078	167.7885	0.0080
AMERICAN WAREHOUSE dba AMERICAN DISTRIBUTING CORP.	1.0000	0.0000	1.0169	0.0000
ANOCAD PLATING	1210.0000	0.0574	1230.4487	0.0584
ARIZONA DISTRIBUTION SERVICES	360.0000	0.0171	366.0839	0.0174
ARIZONA HARD CHROME	2100.0000	0.0997	2135.4896	0.1014
ARIZONA PRECISION SHEET METALS	2400.0000	0.1139	2440.5595	0.1158
ARIZONA PUBLIC SERVICE COMPANY	40324.0000	1.9139	41005.4670	1.9462
ARIZONA TANK LINES	250.0000	0.0119	254.2249	0.0121
ARMOUR RESEARCH CENTER	129.0000	0.0061	131.1801	0.0062*
ASHLAND CHEMICAL COMPANY	825.0000	0.0392	838.9423	0.0398
ATLANTIC RICHFIELD COMPANY	2000.0000	0.0949	2033.7996	0.0965
AZ DEPT. PUBLIC SAFETY (CRIME)	24.1300	0.0011	24.5378	0.0012a
BEAN & COMPANY	25494.0000	1.2100	25924.8432	1.2305+
BECHTEL POWER CORPORATION	5865.0000	0.2784	5964.1173	0.2831
BIO-LAB, INC.	36.0000	0.0017	36.6084	0.0017
BUD WEST	400.0000	0.0190	406.7599	0.0193
CHEVRON U.S.A.	4000.0000	0.1899	4067.5992	0.1931
CHEVRON ASPHALT U.S.A.	(2000.0000)	(0.0949)	(2033.7996)	(0.0965)
CHEVRON U.S.A.	(2000.0000)	(0.0949)	(2033.7996)	(0.0965)
CONTINENTAL CIRCUITS	21000.0000	0.9967	21354.8955	1.0136
DAN J. OBELE	1800.0000	0.0854	1830.4196	0.0869
DEER-O PAINTS & CHEMICALS	6000.0000	0.2848	6101.3987	0.2896
DIGITAL EQUIPMENT CORP.	312275.5200	14.8213	317552.9100	15.0718
DUNN-EDWARDS CORPORATION	1000.0000	0.0475	1016.8998	0.0483
EASON & WALLER GRINDING CO.	1000.0000	0.0475	1016.8998	0.0483
F & B MANUFACTURING COMPANY	7590.0000	0.3602	7718.2694	0.3663
FARMERS AGDUSTRIES INC.	93.5000	0.0044	95.0801	0.0045+
FED MART CORP.	15.0000	0.0007	0.0000	0.0000#
FISHER HEAT TREATING INC.	300.0000	0.0142	305.0699	0.0145
FRAZEE PAINT & WALLCOVERINGS	5600.0000	0.2658	5694.6388	0.2703
GENERAL INSTRUMENTS CORP.	106500.0000	5.0547	108299.8274	5.1402
GENERAL SEMICONDUCTOR INC.	2000.0000	0.0949	2033.7996	0.0965
GILBERT ENGINEERING CO. INC.	4211.7600	0.1999	4282.9379	0.2033
GILBERT NURSERY	8.0000	0.0004	0.0000	0.0000#
GOETTL AIR CONDITIONING INC.	1500.0000	0.0712	1525.3497	0.0724
GOULD FOIL DIVISION	3600.0000	0.1709	3660.8392	0.1738

* - Total includes waste amounts in containers that were converted to gallons.

+ - Total waste amounts are adjusted for empty containers, as set forth in Appendix A.

- These parties were determined to be financially non-viable.

() - Numbers surrounded by parentheses indicate waste volumes and percentages for subsidiaries or divisions of a parent. These amounts are already reflected in the parent's totals.

a - The alleged liability of the State of Arizona is not taken into account.

HASSAYAMPA LANDFILL VOLUMETRIC RANKING SUMMARY
GENERATOR VOLUMETRIC RANKING BY GENERATOR NAME

GENERATOR	ORIGINAL VOLUME	PERCENT	REVISED VOLUME	PERCENT
GOULD INC.	1900.0000	0.0902	1932.1096	0.0917
GOWAN COMPANY	356.0000	0.0169	362.0163	0.0172+
GTE COMMUNICATIONS	23512.7000	1.1160	23910.0596	1.1348
EMM SEMI, INC. (TEMPE)	(22031.1000)	(1.0456)	(22403.4209)	(1.0633)+
GTE COMMUNICATIONS	(1481.6000)	(0.0703)	(1506.6387)	(0.0715)*
HELENA CHEMICAL COMPANY	141.0000	0.0067	143.3829	0.0068*
HERMETIC REGRIGATION	600.0000	0.0285	610.1399	0.0290
HONEYWELL INFORMATION SYSTEMS	885586.0000	42.0320	900552.2155	42.7423
HUDDLESTON EQUIPMENT CO.	400.0000	0.0190	406.7599	0.0193
INTEL CORPORATION	47300.0000	2.2450	48099.3600	2.2829
ITT CANNON ELECTRIC	2660.0000	0.1263	2704.9534	0.1284
ITT COURIER	102485.2000	4.8642	104217.1781	4.9464+
ITT COURIER	(190.0000)	(0.0090)	(193.2110)	(0.0092)+
ITT COURIER PCB FACILITY	(91500.0000)	(4.3428)	(93046.3306)	(4.4162)
ITT COURIER TERMINAL SYSTEMS	(10795.2000)	(0.5124)	(10977.6366)	(0.5210)
KARLSON MACHINE WORKS INC.	2000.0000	0.0949	2033.7996	0.0965
LAJET, INC.	10000.0000	0.4746	0.0000	0.0000#
MAACO AUTO PAINTING	492.0000	0.0234	500.3147	0.0237
MCGRAW-EDISON INTL. METAL PROD	4715.0000	0.2238	4794.6825	0.2276
MEGADYNE CORPORATION	18000.0000	0.8543	0.0000	0.0000#
MOGUL CORPORATION	858.0000	0.0407	872.5000	0.0414
MOTOROLA, INC.	0.0000	0.0000	0.0000	0.0000
NATIONAL CAN CORP.	45175.0000	2.1441	45938.4479	2.1803*
PHOENIX NEWSPAPERS, INC.	8980.0000	0.4262	9131.7601	0.4334
POWERINE OIL COMPANY	500.0000	0.0237	508.4499	0.0241
PRESTIGE APPARELMASTER	350.0000	0.0166	355.9149	0.0169
R. R. EVANS	250.0000	0.0119	254.2249	0.0121
R.T. MFG. CO. INC./ALLIED INVESTMENT CORP.	400.0000	0.0190	406.7599	0.0193
RAMADA ENERGY SYSTEMS	40.0000	0.0019	40.6760	0.0019
REYNOLDS METALS	14502.5000	0.6883	14747.5892	0.7000+
RINCHEM COMPANY	18620.0000	0.8837	18934.6741	0.8987+
ROGERS CORPORATION	4100.0000	0.1946	4169.2891	0.1979*
ROLAMECH COMPANY, INC.	330.0000	0.0157	335.5769	0.0159
SAHUARO PETROLEUM	1800.0000	0.0854	0.0000	0.0000#
SHELL OIL COMPANY	57155.0000	2.7127	58120.9074	2.7586
SHERWIN WILLIAMS CO.	2750.0000	0.1305	2796.4744	0.1327
SOUTHERN PACIFIC PIPELINES	10000.0000	0.4746	10168.9979	0.4826
SOUTHWEST DISTRIBUTING CO.	12153.6000	0.5768	12358.9933	0.5866
SPERRY FLIGHT SYSTEMS	113000.0000	5.3632	114909.6760	5.4539
ST. REGIS PAPER COMPANY	10000.0000	0.4746	10168.9979	0.4826
STANDARD OIL CO.	6000.0000	0.2848	6101.3987	0.2896

* - Total includes waste amounts in containers that were converted to gallons.

+ - Total waste amounts are adjusted for empty containers, as set forth in Appendix A.

- These parties were determined to be financially non-viable.

() - Numbers surrounded by parentheses indicate waste volumes and percentages for subsidiaries or divisions of a parent. These amounts are already reflected in the parent's totals.

HASSAYAMPA LANDFILL VOLUMETRIC RANKING SUMMARY
 GENERATOR VOLUMETRIC RANKING BY GENERATOR NAME

<u>GENERATOR</u>	<u>ORIGINAL VOLUME</u>	<u>PERCENT</u>	<u>REVISED VOLUME</u>	<u>PERCENT</u>
TECHNI FINISH INC.	1322.0000	0.0627	0.0000	0.0000#
TEXACO INC.	4500.0000	0.2136	4576.0490	0.2172
TIERNAY	2290.0000	0.1087	2328.7005	0.1105
TIERNAY CASTING DIVISION	(1080.0000)	(0.0513)	(1098.2518)	(0.0521)
TIERNAY MANUFACTURING CO.	(1210.0000)	(0.0574)	(1230.4487)	(0.0584)
TREFFERS PRECISION INC.	500.0000	0.0237	508.4499	0.0241
U.S. GOVERNMENT	18366.2500	0.8717	18676.6357	0.8864
LUKE AIR FORCE BASE	(11700.0000)	(0.5553)	(11897.7275)	(0.5647)
U.S.D.A. U.S. FOREST SERVICE	(6.2500)	(0.0003)	(6.3556)	(0.0003)
UNITED STATES AIR FORCE	(3460.0000)	(0.1642)	(3518.4733)	(0.1670)
VETERAN'S ADMIN. MEDICAL CTR.	(400.0000)	(0.0190)	(406.7599)	(0.0193)
WILLIAMS AIR FORCE BASE	(2800.0000)	(0.1329)	(2847.3194)	(0.1351)
UNION MANUFACTURING INC.	4590.0000	0.2179	4667.5700	0.2215*
W. A. KRUEGER	19260.0000	0.9141	19585.4899	0.9296
WESTERN DYNEX, INC.	825.0000	0.0392	838.9423	0.0398
WESTERN ELECTRIC COMPANY	65220.0000	3.0955	66322.2042	3.1478
TOTALS:	2106934.5000	100.0000	2106934.5000	100.0000

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HASSAYAMPA LANDFILL VOLUMETRIC RANKING SUMMARY
TRANSPORTER VOLUMETRIC RANKING BY ORIGINAL VOLUME

TRANSPORTER	ORIGINAL VOLUME	PERCENT	REVISED VOLUME	PERCENT
OVERLEY'S PUMPING SERVICE INC.	638028.9000	30.2823	838228.5212	39.7843+*
BEST WAY SEWER INC.	312000.0000	14.8082	409898.8284	19.4547
ARIZONA SEPTIC & IND. CONTROL	255360.0000	12.1200	0.0000	0.0000#
JAKE'S INDUST. WASTE & SEPTIC	227900.0000	10.8167	0.0000	0.0000#
CHEMWAY TRANSPORTATION	128902.5000	6.1180	169349.3068	8.0377+
PHIL'S PUMPING	127022.0000	6.0288	166878.7468	7.9205
ARIZONA SEWER SERVICE INC.	96540.0000	4.5820	126832.1567	6.0197
ARIZONA PETROLEUM CONTRACTORS	92500.0000	4.3903	121524.4924	5.7678
ARIZONA PUBLIC SERVICE COMPANY	40324.0000	1.9139	52976.7960	2.5144
ARIZONA PUBLIC SERVICE COMPANY	(40216.0000)	(1.9087)	(52834.9080)	(2.5077)
FAYE A. PORTER	(108.0000)	(0.0051)	(141.8881)	(0.0067)
RINCHEM COMPANY	37580.0000	1.7836	49371.7884	2.3433+
RICK'S PUMPING SERVICE	32000.0000	1.5188	42040.9055	1.9954
DIAMOND DRUM SERVICE	20697.6000	0.9824	27192.0577	1.2906+
FRED'S PUMPING SERVICE INC.	17742.0000	0.8421	23309.0545	1.1063
BERSET CESSPOOL SERVICE	16095.0000	0.7639	21145.2617	1.0036
RICK'S CESSPOOL SERVICE	14000.0000	0.6645	18392.8961	0.8730
UNIVERSAL WASTE CONTROL INC.	12659.7200	0.6009	16632.0654	0.7894+*
NOT INDICATED	6300.0000	0.2990	0.0000	0.0000+*
NORM'S SILVER DIPPER	6260.0000	0.2971	0.0000	0.0000#
BECHTEL POWER CORPORATION	5865.0000	0.2784	7705.3097	0.3657
AD&D SALVAGE AND DISPOSAL INC.	3870.0000	0.1837	0.0000	0.0000+*
VALLEY WASTE	2578.0000	0.1224	3386.9204	0.1608*
JERRY'S COMPLETE PUMPING SVC.	2500.0000	0.1187	0.0000	0.0000#
PHIL'S SEPTIC	2000.0000	0.0949	2627.5566	0.1247
WILBUR ELLIS COMPANY	1496.4000	0.0710	1965.9378	0.0933+
BILL'S GRADING	1211.7600	0.0575	1591.9840	0.0756
SHELL OIL COMPANY	1155.0000	0.0548	1517.4139	0.0720
A-ABLE CESSPOOL & SEPTIC TANK	1000.0000	0.0475	0.0000	0.0000#
MOGUL CORPORATION	858.0000	0.0407	1127.2218	0.0535
VALLEY STEEL & SUPPLY	409.0000	0.0194	537.3353	0.0255*
MACHINERY ERECTION SERVICE	400.0000	0.0190	525.5113	0.0249
ARIZONA DISTRIBUTION SERVICES	360.0000	0.0171	472.9602	0.0224
GOWAN COMPANY	356.0000	0.0169	467.7051	0.0222+
ROLAMECH COMPANY, INC.	330.0000	0.0157	433.5468	0.0206
AMERICAN PARTS SYSTEM	165.0000	0.0078	216.7734	0.0103
HELENA CHEMICAL COMPANY	141.0000	0.0067	185.2427	0.0088*
VALLEY STEEL SOLID WASTE	103.0000	0.0049	135.3192	0.0064*
FARMER'S AGDUSTRIES INC.	93.5000	0.0044	122.8383	0.0058+
RAMADA ENERGY SYSTEMS	40.0000	0.0019	52.5511	0.0025
BIO-LAB, INC.	36.0000	0.0017	47.2960	0.0022

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- These parties were determined to be financially non-viable.

(-) Numbers surrounded by parentheses indicate waste volumes and percentages for subsidiaries or divisions of a parent. These amounts are already reflected in the parent's totals.

09/28/92

HASSAYAMPA LANDFILL VOLUMETRIC RANKING SUMMARY
TRANSPORTER VOLUMETRIC RANKING BY ORIGINAL VOLUME

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<u>TRANSPORTER</u>	<u>ORIGINAL VOLUME</u>	<u>PERCENT</u>	<u>REVISED VOLUME</u>	<u>PERCENT</u>
AZ DEPT. PUBLIC SAFETY (CRIME)	24.1300	0.0011	31.7015	0.0015@
FED MART CORP.	15.0000	0.0007	0.0000	0.0000#
GARY GRANGER	8.0000	0.0004	0.0000	0.0000#
TONTO NATIONAL FOREST	6.2500	0.0003	8.2111	0.0004
AIRESEARCH MANUFACTURING CO.	1.7400	0.0001	2.2860	0.0001*
	-----	-----	-----	-----
TOTALS:	2106934.5000	100.0000	2106934.5000	100.0000
	=====	=====	=====	=====

- * - Total includes waste amounts in containers that were converted to gallons.
- # - These parties were determined to be financially non-viable.
- @ - The alleged liability of the State of Arizona is not taken into account.

HASSAYAMPA LANDFILL VOLUMETRIC RANKING SUMMARY
TRANSPORTER VOLUMETRIC RANKING BY REVISED VOLUME

<u>TRANSPORTER</u>	<u>ORIGINAL VOLUME</u>	<u>PERCENT</u>	<u>REVISED VOLUME</u>	<u>PERCENT</u>
OVERLEY'S PUMPING SERVICE INC.	638028.9000	30.2823	838228.5212	39.7843+*
BEST WAY SEWER INC.	312000.0000	14.8082	409898.8284	19.4547
CHEMWAY TRANSPORTATION	128902.5000	6.1180	169349.3068	8.0377+
PHIL'S PUMPING	127022.0000	6.0288	166878.7468	7.9205
ARIZONA SEWER SERVICE INC.	96540.0000	4.5820	126832.1567	6.0197
ARIZONA PETROLEUM CONTRACTORS	92500.0000	4.3903	121524.4924	5.7678
ARIZONA PUBLIC SERVICE COMPANY	40324.0000	1.9139	52976.7960	2.5144
ARIZONA PUBLIC SERVICE COMPANY	(40216.0000)	(1.9087)	(52834.9080)	(2.5077)
FAYE A. PORTER	(108.0000)	(0.0051)	(141.8881)	(0.0067)
RINCHEM COMPANY	37580.0000	1.7836	49371.7884	2.3433+
RICK'S PUMPING SERVICE	32000.0000	1.5188	42040.9055	1.9954
DIAMOND DRUM SERVICE	20697.6000	0.9824	27192.0577	1.2906+
FRED'S PUMPING SERVICE INC.	17742.0000	0.8421	23309.0545	1.1063
BERSET CESSPOOL SERVICE	16095.0000	0.7639	21145.2617	1.0036
RICK'S CESSPOOL SERVICE	14000.0000	0.6645	18392.8961	0.8730
UNIVERSAL WASTE CONTROL INC.	12659.7200	0.6009	16632.0654	0.7894+*
BECHTEL POWER CORPORATION	5865.0000	0.2784	7705.3097	0.3657
VALLEY WASTE	2578.0000	0.1224	3386.9204	0.1608*
PHIL'S SEPTIC	2000.0000	0.0949	2627.5566	0.1247
WILBUR ELLIS COMPANY	1496.4000	0.0710	1965.9378	0.0933+
BILL'S GRADING	1211.7600	0.0575	1591.9840	0.0756
SHELL OIL COMPANY	1155.0000	0.0548	1517.4139	0.0720
MOGUL CORPORATION	858.0000	0.0407	1127.2218	0.0535
VALLEY STEEL & SUPPLY	409.0000	0.0194	537.3353	0.0255*
MACHINERY ERECTION SERVICE	400.0000	0.0190	525.5113	0.0249
ARIZONA DISTRIBUTION SERVICES	360.0000	0.0171	472.9602	0.0224
GOWAN COMPANY	356.0000	0.0169	467.7051	0.0222+
ROLAMECH COMPANY, INC.	330.0000	0.0157	433.5468	0.0206
AMERICAN PARTS SYSTEM	165.0000	0.0078	216.7734	0.0103
HELENA CHEMICAL COMPANY	141.0000	0.0067	185.2427	0.0088*
VALLEY STEEL SOLID WASTE	103.0000	0.0049	135.3192	0.0064*
FARMER'S AGDUSTRIES INC.	93.5000	0.0044	122.8383	0.0058+
RAMADA ENERGY SYSTEMS	40.0000	0.0019	52.5511	0.0025
BIO-LAB, INC.	36.0000	0.0017	47.2960	0.0022
AZ DEPT. PUBLIC SAFETY (CRIME)	24.1300	0.0011	31.7015	0.0015@
TONTO NATIONAL FOREST	6.2500	0.0003	8.2111	0.0004
AIRESEARCH MANUFACTURING CO.	1.7400	0.0001	2.2860	0.0001*
A-ABLE CESSPOOL & SEPTIC TANK	1000.0000	0.0475	0.0000	0.0000#
AD&D SALVAGE AND DISPOSAL INC.	3870.0000	0.1837	0.0000	0.0000*#
ARIZONA SEPTIC & IND. CONTROL	255360.0000	12.1200	0.0000	0.0000#
FED MART CORP.	15.0000	0.0007	0.0000	0.0000#

* - Total includes waste amounts in containers that were converted to gallons.

+ - Total waste amounts are adjusted for empty containers, as set forth in Appendix A.

- These parties were determined to be financially non-viable.

(-) Numbers surrounded by parentheses indicate waste volumes and percentages for subsidiaries or divisions of a parent. These amounts are already reflected in the parent's totals.

@ - The alleged liability of the State of Arizona is not taken into account.

09/28/92

HASSAYAMPA LANDFILL VOLUMETRIC RANKING SUMMARY
TRANSPORTER VOLUMETRIC RANKING BY REVISED VOLUME

PAGE: 20

<u>TRANSPORTER</u>	<u>ORIGINAL VOLUME</u>	<u>PERCENT</u>	<u>REVISED VOLUME</u>	<u>PERCENT</u>
GARY GRANGER	8.0000	0.0004	0.0000	0.0000#
JAKE'S INDUST. WASTE & SEPTIC	227900.0000	10.8167	0.0000	0.0000#
JERRY'S COMPLETE PUMPING SVC.	2500.0000	0.1187	0.0000	0.0000#
NORM'S SILVER DIPPER	6260.0000	0.2971	0.0000	0.0000#
NOT INDICATED	6300.0000	0.2990	0.0000	0.0000+*
	-----	-----	-----	-----
TOTALS:	2106934.5000	100.0000	2106934.5000	100.0000
	=====	=====	=====	=====

* - Total includes waste amounts in containers that were converted to gallons.

+ - Total waste amounts are adjusted for empty containers, as set forth in Appendix A.

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HASSAYAMPA LANDFILL VOLUMETRIC RANKING SUMMARY
TRANSPORTER VOLUMETRIC RANKING BY TRANSPORTER NAME

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A-ABLE CESSPOOL & SEPTIC TANK	1000.0000	0.0475	0.0000	0.0000#
AD&D SALVAGE AND DISPOSAL INC.	3870.0000	0.1837	0.0000	0.0000*#
AIRESEARCH MANUFACTURING CO.	1.7400	0.0001	2.2860	0.0001*
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- These parties were determined to be financially non-viable.

() - Numbers surrounded by parentheses indicate waste volumes and percentages for subsidiaries or divisions of a parent. These amounts are already reflected in the parent's totals.

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09/28/92

HASSAYAMPA LANDFILL VOLUMETRIC RANKING SUMMARY
TRANSPORTER VOLUMETRIC RANKING BY TRANSPORTER NAME

PAGE: 22

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	-----	-----	-----	-----
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	=====	=====	=====	=====

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APPENDIX A
UNIT CONVERSION FACTORS

APPENDIX A
UNIT CONVERSION FACTORS

ARIZONA STATE CONVERSION FACTORS

The following conversion factors were obtained from the Arizona Department of Health Services (ADHS) and were used in calculating waste quantities for each transaction:

<u>Unit or Container Type (as indicated on manifests)</u>	<u>Conversion Factor (in gallons)</u>
Barrel	42.000000
Cubic Foot	7.480000
Cubic Yard	201.960000
Drum	55.000000
Fifty-five Gallon Drum	55.000000
Gallon	1.000000
Gram	0.000265
Pound	0.120000
Ton	240.000000

EMPTY CONTAINER CONVERSION FACTORS

The following conversion factors, which are 10 percent of the actual container volume, were determined by the EPA Region IX Toxics and Waste Management Division project contact for the 1988 volumetric ranking, and were used in calculating waste quantities for each transaction:

<u>Unit or Container Type (as indicated on manifests)</u>	<u>Conversion Factor (in gallons)</u>
Cubic Feet of Container	0.748000
Drum	5.500000
Five Gallon Container	0.500000
One Gallon Container	0.100000
Ten Gallon Container	1.000000

NOTE: When a conversion factor for an empty container was used in determining a party's total contribution, a plus sign (+) appears next to that party's revised percentage contribution.

UNIT CONVERSION FACTORS
(concluded)

NON-STANDARD CONVERSION FACTORS

Non-standard conversion factors were those not identified on the original ADHS list but were listed on manifests without a stated capacity. The EPA Region IX case team determined that a conversion factor of one gallon should be assigned to each.

<u>Container Type (as indicated on manifests)</u>	<u>Conversion Factor (in gallons)</u>
Bag	1.000000
Carboy	1.000000
Carton	1.000000
Pad	1.000000
Solvent Bottle	1.000000

NOTE: When a non-standard conversion factor was used in calculating the total waste for a party, an asterisk (*) appears next to that party's revised percentage contribution.

APPENDIX B
VOLUMETRIC RANKING CALCULATIONS

APPENDIX B

VOLUMETRIC RANKING CALCULATIONS

The following calculations were used to convert various transaction unit types to gallons, sum each party's volume (in gallons) for all transactions, and determine each party's contribution as a relative percentage of waste at the site. These calculations were used by the CEAT in preparing the 1988 volumetric ranking.

To convert a quantity of waste to gallons, for each transaction:

$$U_Q \quad X \quad U_{CF} \quad = \quad V_T$$

To determine the total quantity contributed by each party:

$$\sum V_T \quad = \quad V_P$$

To determine the total quantity contributed to the site by all parties:

$$\sum V_P \quad = \quad V_{\Sigma P}$$

To determine the percentage of waste contributed by each party, relative to other parties:

$$V_P \quad \div \quad V_{\Sigma P} \quad = \quad \text{Relative Percentage of Waste Contributed}$$

where,

- U_Q = Total quantity of waste per transaction, expressed in units other than gallons
- U_{CF} = Unit conversion factor (refer to Appendix A)
- V_T = Volume of waste contributed in a single transaction, in gallons
- V_P = Volume of waste contributed by a single party
- $V_{\Sigma P}$ = Volume of waste contributed by all parties

APPENDIX C
PROCEDURES FOR FINANCIAL VIABILITY ANALYSIS

APPENDIX C

PROCEDURES FOR FINANCIAL VIABILITY ANALYSIS

The following procedures were utilized by NEIC during the financial analysis of the Hassayampa Landfill generators and transporters.

- The NBAR team (EPA Headquarters, EPA Region IX, NEIC, and CEAT) requested financial analyses for the Hassayampa Landfill generators and transporters (approximately 140 parties).
- The NEIC Financial Management Section analyzed Dun & Bradstreet reports for the Hassayampa Landfill parties. This review resulted in the following circumstances:
 - the identification of several parties that are no longer in existence, or that have filed bankruptcy and have a limited financial asset base.
 - the identification of parties whose Dun & Bradstreet information was either out-of-date or insufficient for determining financial viability.

When necessary, updated Dun & Bradstreet reports were obtained or, in some cases, additional information was obtained from the Secretary of State in Arizona.

- After the information was examined, only those parties that were nonexistent or legitimately in bankruptcy with no assets were determined to be financially non-viable. Parties for which no information was obtained were included as financially viable. At no time during this analysis was an "ability to pay" approach used in determining financial viability for the Hassayampa Landfill parties.

APPENDIX D
CALCULATIONS FOR REALLOCATION OF WASTE VOLUMES

APPENDIX D

CALCULATIONS FOR REALLOCATION OF WASTE VOLUMES

To proportionally reallocate waste volumetric shares among parties:

$$\left[\left(\frac{V_{OP}}{V_{RSP}} \right) \times V_R \right] + V_{OP} = V_{RP}$$

To determine percent responsibility of each viable party:

$$\frac{V_{RP}}{V_{OSP}} = \text{Revised Percent Responsibility}$$

where,

- V_{OP} = Original volume of waste contributed by a single party, prior to reallocation of orphan or non-viable party shares
- V_{RSP} = Revised volume of waste contributed by all parties, obtained by subtracting the shares of non-viable parties from the volume contributed by all parties
- V_R = Volume of reallocable waste shares to be distributed among viable parties
- V_{RP} = Revised volume of waste contributed by a single party, after reallocation of waste shares
- V_{OSP} = Original volume of waste contributed by all parties, prior to reallocation of orphan or non-viable party shares

Example calculation: party no. 3 is determined to be non-viable:

<u>Party</u>	<u>Original Volume</u>	<u>Original % Contribution</u>
1	700	70
2	200	20
3	100	10

$$\left[\left(\frac{700}{900} \right) \times 100 \right] + 700 = 777.78$$

$$\frac{777.78}{1000} \times 100 = 77.78\% \text{ (Revised Percent Responsibility, party no. 1)}$$

$$\left[\left(\frac{200}{900} \right) \times 100 \right] + 200 = 222.22$$

$$\frac{222.22}{1000} \times 100 = 22.22\% \text{ (Revised Percent Responsibility, party no. 2)}$$

UNITED STATES DISTRICT COURT
DISTRICT OF ARIZONA

UNITED STATES OF AMERICA and
THE STATE OF ARIZONA,
Plaintiffs,
v.

CIVIL ACTION NO.
CONSENT DECREE

Defendants.



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CONSENT DECREE

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1
2 CONSENT DECREE
3

4 I. BACKGROUND

5 A. The United States of America ("United States"), on
6 behalf of the Administrator of the United States Environmental
7 Protection Agency ("EPA"), filed a complaint in this matter
8 pursuant to Sections 106 and 107 of the Comprehensive
9 Environmental Response, Compensation, and Liability Act, as
10 amended by the Superfund Amendments and Reauthorization Act of
11 1986 ("CERCLA"), 42 U.S.C. §§ 9606 and 9607.

12 B. The United States in its complaint seeks, inter alia:
13 (1) reimbursement of costs incurred by EPA and the Department of
14 Justice for response actions at the Hassayampa Landfill Superfund
15 Site in Maricopa County, Arizona, together with accrued interest;
16 and (2) performance of studies and response work by the
17 Defendants at the Site consistent with the National Contingency
18 Plan, 40 C.F.R. Part 300 (as amended) ("NCP").

19 C. In accordance with the NCP and Section 121(f)(1)(F) of
20 CERCLA, 42 U.S.C. § 9621(f)(1)(F), EPA notified the State of
21 Arizona (the "State") on September 18, 1992 of negotiations with
22 potentially responsible parties regarding the implementation of
23 the remedial design and remedial action for the Site, and EPA has
24 provided the State with an opportunity to participate in such
25 negotiations and be a party to this Consent Decree.

26 D. The State of Arizona (the "State") has also filed a
27 complaint against the defendants in this Court alleging that the
28 defendants are liable to the State under Section 107 of CERCLA,

1 42 U.S.C. § 9607, and [list state laws cited in the State's
2 complaint], for:

3 _____.
4 E. In accordance with Section 122(j)(1) of CERCLA, 42
5 U.S.C. § 9622(j)(1), EPA notified the Department of the Interior
6 on _____, 1992 of negotiations with potentially
7 responsible parties regarding the release of hazardous substances
8 that may have resulted in injury to the natural resources under
9 Federal trusteeship and encouraged the trustee to participate in
10 the negotiation of this Consent Decree.

11 F. The Defendants that have entered into this Consent
12 Decree ("Settling Defendants", and "De Minimis Settling
13 Defendants") do not admit any liability to the Plaintiffs arising
14 out of the transactions or occurrences alleged in the complaints.

15 G. Pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605,
16 EPA placed the Site on the National Priorities List, set forth at
17 40 C.F.R. Part 300, Appendix B, by publication in the Federal
18 Register on July 21, 1987, 52 Fed. Reg. 140;

19 H. In response to a release or a substantial threat of a
20 release of hazardous substances at or from the Site, in 1988 a
21 group of the Defendants (Hassayampa Steering Committee, or "HSC")
22 commenced a remedial investigation and feasibility study
23 ("RI/FS") for the Site pursuant to 40 C.F.R. § 300.430;

24 I. Under the direction and oversight of EPA, HSC completed
25 a Remedial Investigation ("RI") Report on April 4, 1991, and
26 completed a Feasibility Study ("FS") Report on May 20, 1992,
27 pursuant to an Administrative Consent Order (Docket No. 88-08)
28 executed on April 8, 1988 on behalf of the Director of the Toxics

1 & Waste Management Division, U.S. EPA Region IX;

2 J. Pursuant to Section 117 of CERCLA, 42 U.S.C. § 9617,
3 EPA published notice of both the completion of the FS and the
4 proposed plan for remedial action on June 1, 1992, in a major
5 local newspaper of general circulation. EPA provided an
6 opportunity for written and oral comments from the public on the
7 proposed plan for remedial action. A copy of the transcript of
8 the public meeting is available to the public as part of the
9 administrative record upon which the Regional Administrator based
10 the selection of the response action.

11 K. The decision by EPA selecting the remedial action to be
12 implemented at the Site is embodied in a final Record of Decision
13 ("ROD"), executed on August 6, 1992, to which the State has given
14 its concurrence. The ROD includes a summary of EPA's responses
15 to the public comments. Notice of the final plan was published
16 in accordance with Section 117(b) of CERCLA, 42 U.S.C. § 9617(b).

17 L. Based on the information presently available to EPA and
18 the State, EPA and the State believe that the Work will be
19 properly and promptly conducted by the Settling Defendants if
20 conducted in accordance with the requirements of this Consent
21 Decree and its appendices.

22 M. Solely for the purposes of Section 113(j) of CERCLA,
23 the Remedial Action selected by the ROD and the Work to be
24 performed by the Settling Defendants shall constitute a response
25 action taken or ordered by the President.

26 N. EPA has determined that settlement with each of the De
27 Minimis Settling Defendants involves only a minor portion of the
28 response costs at the Site.

1 O. Based on the information presently available to EPA and
2 the State, the amount of hazardous substances contributed to the
3 Site by each De Minimis Settling Defendant constitutes less than
4 ___% of the hazardous substances at the Site, and the toxic or
5 other hazardous effects of the hazardous substances contributed
6 to the Site by each De Minimis Settling Defendant to the Site do
7 not contribute disproportionately to the cumulative toxic or
8 other hazardous effects of the hazardous substances at the Site.

9 P. The Parties recognize, and the Court by entering this
10 Consent Decree finds, that this Consent Decree has been
11 negotiated by the Parties in good faith and implementation of
12 this Consent Decree will expedite the cleanup of the Site and
13 will avoid prolonged and complicated litigation between the
14 Parties, and that this Consent Decree is fair, reasonable,
15 practicable, and in the public interest.

16 NOW, THEREFORE, it is hereby Ordered, Adjudged, and Decreed:

17 II. JURISDICTION

18 1. This Court has jurisdiction over the subject matter of
19 this action pursuant to 28 U.S.C. §§ 1331 and 1345, and 42 U.S.C.
20 §§ 9606, 9607, and 9613(b). This Court also has personal
21 jurisdiction over the Defendants. Solely for the purposes of
22 this Consent Decree and the underlying complaints, Defendants
23 waive all objections and defenses that they may have to
24 jurisdiction of the Court or to venue in this District.
25 Defendants shall not challenge the terms of this Consent Decree
26 or this Court's jurisdiction to enter and enforce this Consent
27 Decree.
28

1 III. PARTIES BOUND

2 2. This Consent Decree applies to and is binding upon the
3 United States and the State and upon Defendants and their
4 successors and assigns. Any change in ownership or corporate
5 status of a Defendant including, but not limited to, any transfer
6 of assets or real or personal property shall in no way alter such
7 Defendant's responsibilities under this Consent Decree.

8 3. Settling Defendants shall provide a copy of this
9 Consent Decree to each contractor hired to perform the Work (as
10 defined below) required by this Consent Decree and to each person
11 representing any Settling Defendant with respect to the Site or
12 the Work and shall condition all contracts entered into hereunder
13 upon performance of the Work in conformity with the terms of this
14 Consent Decree. Settling Defendants or their contractors shall
15 provide written notice of the Consent Decree to all
16 subcontractors hired to perform any portion of the Work required
17 by this Consent Decree. Settling Defendants shall nonetheless be
18 responsible for ensuring that their contractors and
19 subcontractors perform the Work contemplated herein in accordance
20 with this Consent Decree. With regard to the activities
21 undertaken pursuant to this Consent Decree, each contractor and
22 subcontractor shall be deemed to be in a contractual relationship
23 with the Settling Defendants within the meaning of Section
24 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3).

25 IV. DEFINITIONS

26 4. Unless otherwise expressly provided herein, terms used
27 in this Consent Decree which are defined in CERCLA or in
28 regulations promulgated under CERCLA shall have the meaning

1 assigned to them in CERCLA or in such regulations. Whenever
2 terms listed below are used in this Consent Decree or in the
3 appendices attached hereto and incorporated hereunder, the
4 following definitions shall apply:

5 "ADEQ" shall mean the Arizona Department of Environmental
6 Quality and any successor departments or agencies of the State.

7 "CERCLA" shall mean the Comprehensive Environmental
8 Response, Compensation, and Liability Act of 1980, as amended, 42
9 U.S.C. §§ 9601 et seq.

10 "Consent Decree" shall mean this Consent Decree and all
11 appendices attached hereto (listed in Section XXX), including the
12 Record of Decision and the Scope of Work. In the event of
13 conflict between this Consent Decree and any appendix, this
14 Consent Decree shall control.

15 "Day" shall mean a calendar day unless expressly stated to
16 be a working day. "Working day" shall mean a day other than a
17 Saturday, Sunday, or Federal holiday. In computing any period of
18 time under this Consent Decree, where the last day would fall on
19 a Saturday, Sunday, or Federal holiday, the period shall run
20 until the close of business of the next working day.

21 "Defendants" shall mean the "Settling Defendants" and the
22 "De Minimis Settling Defendants."

23 "De Minimis Settling Defendants" shall mean the named
24 defendants listed in Appendix F (De Minimis Settling Defendants)
25 who are signatories to this Consent Decree.

26 "EPA" shall mean the United States Environmental Protection
27 Agency and any successor departments or agencies of the United
28 States.

1 "Future Response Costs" shall mean all costs, including, but
2 not limited to, direct and indirect costs, that the United States
3 and the State incur in reviewing or developing plans, reports and
4 other items pursuant to this Consent Decree, verifying the Work,
5 or otherwise implementing, overseeing, or enforcing this Consent
6 Decree, including, but not limited to, payroll costs, contractor
7 costs, travel costs, laboratory costs, the costs incurred
8 pursuant to Sections VII, VIII, X (including, but not limited to,
9 attorneys fees and the amount of just compensation), XVI, and
10 Paragraph 93 of Section XXII. Future Response Costs shall also
11 include all costs, including direct and indirect costs, paid by
12 the United States and the State in connection with the Site
13 between July 31, 1992 and the effective date of this Consent
14 Decree, and EPA payroll costs from July 11, 1992 to the effective
15 date of this Consent Decree, and all interest on the Past
16 Response Costs from July 31, 1992 to the date of payment of the
17 Past Response Costs.

18 "National Contingency Plan" or "NCP" shall mean the National
19 Oil and Hazardous Substances Pollution Contingency Plan
20 promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605,
21 codified at 40 C.F.R. Part 300, including, but not limited to,
22 any amendments thereto.

23 "Operation and Maintenance" or "O & M" shall mean all
24 activities required to maintain the effectiveness of the Remedial
25 Action as required under the Operation and Maintenance Plan
26 approved or developed by EPA pursuant to this Consent Decree and
27 the Scope of Work (SOW).

28 "Owner Settling Defendants" shall mean the Settling

1 Defendants listed in Appendix E.

2 "Paragraph" shall mean a portion of this Consent Decree
3 identified by an arabic numeral or an upper case letter.

4 "Parties" shall mean the United States, the State of
5 Arizona, and the Defendants.

6 "Past Response Costs" shall mean all costs, including, but
7 not limited to, direct and indirect costs and interest, that the
8 United States and the State incurred and paid with regard to the
9 Site prior to July 11, 1992 for EPA payroll costs, and to July
10 31, 1992 for all other costs.

11 "Performance Standards" shall mean those cleanup standards,
12 standards of control, and other substantive requirements,
13 criteria or limitations set forth in the ROD and in Sections
14 III.A.2 or III.B.2 of the SOW.

15 "Plaintiffs" shall mean the United States and the State of
16 Arizona.

17 "RCRA" shall mean the Solid Waste Disposal Act, as amended,
18 42 U.S.C. §§ 6901 et seq. (also known as the Resource
19 Conservation and Recovery Act).

20 "Record of Decision" or "ROD" shall mean the EPA Record of
21 Decision relating to the Site signed on August 6, 1992, by the
22 Regional Administrator, EPA Region IX, and all attachments
23 thereto.

24 "Remedial Action" shall mean those activities, except for
25 Operation and Maintenance, to be undertaken by the Settling
26 Defendants to implement the final plans and specifications
27 submitted by the Settling Defendants pursuant to the Remedial
28 Design Work Plan and approved by EPA.

1 "Remedial Action Work Plan" shall mean the document
2 submitted by the Settling Defendants pursuant to Paragraph 15.a
3 of this Consent Decree and described more fully in the SOW.

4 "Remedial Design" shall mean those activities to be
5 undertaken by the Settling Defendants to develop the final plans
6 and specifications for the Remedial Action pursuant to the
7 Remedial Design Work Plan.

8 "Remedial Design Work Plan" shall mean the document
9 submitted by the Settling Defendants pursuant to Paragraph 14.a
10 of this Consent Decree and described more fully in the SOW.

11 "Scope of Work" or "SOW" shall mean the scope of work for
12 implementation of the Remedial Design, Remedial Action, and
13 Operation and Maintenance at the Site, as set forth in Appendix B
14 to this Consent Decree and any modifications made in accordance
15 with this Consent Decree.

16 "Section" shall mean a portion of this Consent Decree
17 identified by a roman numeral.

18 "Settling Defendants" shall mean those Parties identified in
19 Appendices D (Non-Owner Settling Defendants) and E (Owner
20 Settling Defendants).

21 "Site" shall mean the Hassayampa Landfill Superfund site,
22 which shall mean the 10-acre area of the 47-acre municipal
23 landfill where hazardous wastes are known to be disposed, as well
24 as any areas where site-related contaminants have come to be
25 located. The municipal landfill is located in Maricopa County,
26 Arizona, within the Southeast one-quarter of Section 3, Township
27 1 South, Range 5 West, about 40 miles west of Phoenix, Arizona.
28 The landfill is bounded on the east by Old Wickenburg Road, on

1 the southwest by Salome Road, on the west by Wickenburg Road, and
2 on the north by the east-west line bisecting Section 3. The Site
3 is depicted generally on the map attached as Appendix C.

4 "State" shall mean the State of Arizona.

5 "Supervising Contractor" shall mean the principal contractor
6 retained by the Settling Defendants to supervise and direct the
7 implementation of the Work under this Consent Decree.

8 "United States" shall mean the United States of America.

9 "Waste Material" shall mean (1) any "hazardous substance"
10 under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any
11 pollutant or contaminant under Section 101(33), 42 U.S.C.
12 § 9601(33); (3) any "solid waste" under Section 1004(27) of RCRA,
13 42 U.S.C. § 6903(27); and (4) any "hazardous material" under
14 [State statutory citation].

15 "Work" shall mean all activities Settling Defendants are
16 required to perform under this Consent Decree, except those
17 required by Section XXVI (Retention of Records).

18 V. GENERAL PROVISIONS

19 5. Objectives of the Parties

20 The objectives of the Parties in entering into this Consent
21 Decree are to protect public health or welfare or the environment
22 at the Site by the design and implementation of response actions
23 at the Site by the Settling Defendants and to reimburse response
24 costs of the Plaintiffs.

25 6. Commitments by Defendants

26 a. De Minimis Settling Defendants shall pay the
27 amounts set forth in, and in the manner provided in, Section XVII
28 (Reimbursement and Payment of Response Costs) and Appendix F of

1 this Consent Decree. De Minimis Settling Defendants are also
2 subject to all provisions and requirements of this Decree which
3 reference Defendants or De Minimis Settling Defendants, including
4 but not limited to Paragraph 32 of Section X (Access); Section
5 XXVI (Retention of Records); Section XXI (Stipulated Penalties);
6 Paragraph 57 of Section XVII (Reimbursement and Payment of
7 Response Costs); Section XXII (Covenants Not to Sue by
8 Plaintiffs); and Section XXIII (Covenants Not to Sue by
9 Defendants).

10 b. Settling Defendants shall finance and perform the
11 Work in accordance with this Consent Decree and all plans,
12 standards, specifications, and schedules set forth in or
13 developed and approved by EPA pursuant to this Consent Decree.
14 Settling Defendants shall also reimburse the United States and
15 the State for Past Response Costs and Future Response Costs as
16 provided in Section XVII (Reimbursement and Payment of Response
17 Costs) of this Consent Decree.

18 c. The obligations of Settling Defendants to finance
19 and perform the Work and to pay amounts owed the United States
20 and the State under this Consent Decree are joint and several.
21 In the event of the insolvency or other failure of any one or
22 more Settling Defendants to implement the requirements of this
23 Consent Decree, the remaining Settling Defendants shall complete
24 all such requirements.

25 7. Compliance With Applicable Law

26 All activities undertaken by Settling Defendants pursuant to
27 this Consent Decree shall be performed in accordance with the
28 requirements of all applicable federal and state laws and

1 regulations. Settling Defendants must also comply with all
2 applicable or relevant and appropriate requirements of all
3 Federal and state environmental laws as set forth in the ROD and
4 the SOW. The activities conducted pursuant to this Consent
5 Decree, if approved by EPA, shall be considered to be consistent
6 with the NCP.

7 8. Unauthorized Activities.

8 Defendants shall conduct no activities at the Site except
9 activities specifically authorized under this Decree, activities
10 required by and in furtherance of the Work under this Decree, or
11 activities specifically authorized, in writing, by EPA.

12 9. Permits

13 a. As provided in Section 121(e) of CERCLA, 42 U.S.C.
14 § 9621(e), and § 300.5 of the NCP, 40 C.F.R. § 300.5, no permit
15 shall be required for any portion of the Work conducted entirely
16 on-site. Where any portion of the Work requires a federal or
17 state permit or approval, Settling Defendants shall submit timely
18 and complete applications and take all other actions necessary to
19 obtain all such permits or approvals.

20 b. The Settling Defendants may seek relief under the
21 provisions of Section XIX (Force Majeure) of this Consent Decree
22 for any delay in the performance of the Work resulting from a
23 failure to obtain, or a delay in obtaining, any permit required
24 for the Work.

25 c. This Consent Decree is not, and shall not be
26 construed to be, a permit issued pursuant to any federal or state
27 statute or regulation.

1 10. Notice of Obligations to Successors-in-Title

2 a. Within 15 days after the entry of this Consent
3 Decree, the Owner Settling Defendant(s) shall record a certified
4 copy of this Consent Decree with the Recorder's Office, Maricopa
5 County, State of Arizona. Thereafter, each deed, title, or other
6 instrument conveying an interest in the property included in the
7 Site shall contain a notice stating that the property is subject
8 to this Consent Decree and shall reference the recorded location
9 of the Consent Decree and any restrictions applicable to the
10 property under this Consent Decree.

11 b. The obligations of each Owner Settling Defendant
12 with respect to the provision of access under Section X (Access)
13 and the implementation of institutional controls as set forth in
14 the SOW shall be binding upon any and all such Settling
15 Defendants and any and all persons who subsequently acquire any
16 such interest or portion thereof (hereinafter "Successors-in-
17 Title"). Within 15 days after the entry of this Consent Decree,
18 each Owner Settling Defendant shall record at the Recorder's
19 Office a notice of obligation to provide access under Section X
20 (Access) and related covenants. Each subsequent instrument
21 conveying an interest to any such property included in the Site
22 shall reference the recorded location of such notice and
23 covenants applicable to the property.

24 c. Any Owner Settling Defendant and any Successor-in-
25 Title shall, at least 30 days prior to the conveyance of any such
26 interest, give written notice of this Consent Decree to the
27 grantee and written notice to EPA and the State of the proposed
28 conveyance, including the name and address of the grantee, and

1 the date on which notice of the Consent Decree was given to the
2 grantee. In the event of any such conveyance, the Settling
3 Defendants' obligations under this Consent Decree, including
4 their obligations to provide or secure access pursuant to Section
5 X, shall continue to be met by the Settling Defendants. In
6 addition, if the United States and the State approve, the grantee
7 may perform some or all of the Work under this Consent Decree.
8 In no event shall the conveyance of an interest in property that
9 includes, or is a portion of, the Site release or otherwise
10 affect the liability of the Settling Defendants to comply with
11 the Consent Decree.

12 VI. PERFORMANCE OF THE WORK BY SETTLING DEFENDANTS

13 11. Selection of Supervising Contractor.

14 a. All aspects of the Work to be performed by
15 Settling Defendants pursuant to Sections VI (Performance of the
16 Work by Settling Defendants), VII (Additional Response Actions),
17 VIII (U.S. EPA Periodic Review), and IX (Quality Assurance,
18 Sampling and Data Analysis) of this Consent Decree shall be under
19 the direction and supervision of the Supervising Contractor, the
20 selection of which shall be subject to disapproval by EPA after a
21 reasonable opportunity for review and comment by the State.
22 Within 10 days after the lodging of this Consent Decree, Settling
23 Defendants shall notify EPA and the State in writing of the name,
24 title, and qualifications of any contractor proposed to be the
25 Supervising Contractor. EPA will issue a notice of disapproval
26 or an authorization to proceed. If at any time thereafter,
27 Settling Defendants propose to change a Supervising Contractor,
28 Settling Defendants shall give such notice to EPA and the State

1 and must obtain an authorization to proceed from EPA, after a
2 reasonable opportunity for review and comment by the State,
3 before the new Supervising Contractor performs, directs, or
4 supervises any Work under this Consent Decree.

5 b. If EPA disapproves a proposed Supervising
6 Contractor, EPA will notify Settling Defendants in writing.
7 Settling Defendants shall submit to EPA and the State a list of
8 contractors, including the qualifications of each contractor,
9 that would be acceptable to them within 30 days of receipt of
10 EPA's disapproval of the contractor previously proposed. EPA
11 will provide written notice of the names of any contractor(s)
12 that it disapproves and an authorization to proceed with respect
13 to any of the other contractors. Settling Defendants may select
14 any contractor from that list that is not disapproved and shall
15 notify EPA and the State of the name of the contractor selected
16 within 21 days of EPA's authorization to proceed.

17 c. If EPA fails to provide written notice of its
18 authorization to proceed or disapproval as provided in this
19 Paragraph and this failure prevents the Settling Defendants from
20 meeting one or more deadlines in a plan approved by the EPA
21 pursuant to this Consent Decree, Settling Defendants may seek
22 relief under the provisions of Section XIX (Force Majeure)
23 hereof.

24 12. Additional Investigation.

25 Settling Defendants shall submit to EPA for its review and
26 (if applicable) approval an Additional Investigation Work Plan,
27 Sampling and Analysis Plan and Health and Safety Plan to
28 characterize the extent of vadose contamination present to the

1 north of the Site as required by Section IV.1.B.1. of the SOW.
2 After receipt of EPA approval, the Settling Defendants shall
3 implement the Additional Investigation Work Plan, Sampling and
4 Analysis Plan, and Health and Safety Plan in accordance with the
5 schedule established by the SOW. After completion of the
6 Additional Investigation, Settling Defendants shall submit an
7 Additional Investigation Report. The contents of these three
8 Plans and the Report, and the schedules for their submittal and
9 implementation, are set forth in or will be developed as
10 described in the SOW. The Health and Safety Plan shall conform
11 to the applicable Occupational Safety and Health Administration
12 and EPA requirements including, but not limited to, 29 C.F.R.
13 § 1910.120. Upon their approval by EPA, and to the extent not
14 inconsistent with this Consent Decree, the ROD, and the SOW,
15 these deliverables shall be incorporated into and become
16 enforceable under this Consent Decree.

17 13. Vadose Zone Treatability Study.

18 Settling Defendants shall submit to EPA for its review and
19 (if applicable) approval a Vadose Zone Treatability Study Work
20 Plan, Sampling and Analysis Plan, and Health and Safety Plan to
21 evaluate the soil vapor extraction component of the Work and to
22 determine soil vapor cleanup standards as required by Sections
23 III.A.3 and IV.1.B.2 of the SOW. After receipt of EPA approval,
24 the Settling Defendants shall implement the Vadose Zone
25 Treatability Study Work Plan, Sampling and Analysis Plan, and
26 Health and Safety Plan in accordance with the schedule
27 established by the SOW. After implementation of the study,
28 Settling Defendants shall submit a Vadose Zone Treatability Study

1 Report. The contents of these three Plans and the Report, and
2 the schedules for their submittal and implementation, are set
3 forth in or will be developed as described in the SOW. The
4 Health and Safety Plan shall conform to the applicable
5 Occupational Safety and Health Administration and EPA
6 requirements including, but not limited to, 29 C.F.R. § 1910.120.
7 Upon their approval by EPA, and to the extent not inconsistent
8 with this Consent Decree, the ROD, and the SOW, these
9 deliverables shall be incorporated into and become enforceable
10 under this Consent Decree.

11 14. Remedial Design.

12 a. On or before the date of lodging of this Consent
13 Decree, Settling Defendants shall submit to EPA and the State a
14 work plan for the design of the Remedial Action ("Remedial Design
15 Work Plan"). The Remedial Design Work Plan shall provide for
16 design of the remedy set forth in the ROD in accordance with the
17 SOW. Upon its approval by EPA, and to the extent not
18 inconsistent with this Consent Decree, the ROD, and the SOW, the
19 Remedial Design Work Plan shall be incorporated into and become
20 enforceable under this Consent Decree. With the Remedial Design
21 Work Plan, the Settling Defendants shall submit to EPA and the
22 State a Health and Safety Plan for field design activities which
23 conforms to the applicable Occupational Safety and Health
24 Administration and EPA requirements including, but not limited
25 to, 29 C.F.R. § 1910.120.

26 b. The Remedial Design Work Plan shall include plans
27 and schedules for implementation of all remedial design and pre-
28 design tasks identified in the SOW, including, but not limited

1 to, plans and schedules for the completion of: (1) Preliminary
2 Design; (2) compilation and analysis of data and treatability
3 study results; (3) preliminary plans and specifications; (4) a
4 preliminary construction schedule; and (5) a pre-final/final
5 design submittal. In addition, the Remedial Design Work Plan
6 shall include a schedule for completion of the Remedial Action
7 Work Plan.

8 c. Upon approval of the Remedial Design Work Plan by
9 EPA, after a reasonable opportunity for review and comment by the
10 State, and submittal of the Health and Safety Plan for all field
11 activities to EPA and the State, Settling Defendants shall
12 implement the Remedial Design Work Plan. The Settling Defendants
13 shall submit to EPA and the State all plans, submittals and other
14 deliverables required under the approved Remedial Design Work
15 Plan in accordance with the approved schedule for review and
16 approval pursuant to Section XII (Submissions Requiring Agency
17 Approval). Unless otherwise directed by EPA, Settling Defendants
18 shall not commence further Remedial Design activities at the Site
19 prior to approval of the Remedial Design Work Plan.

20 15. Remedial Action.

21 a. Not later than three months after EPA approval of
22 the RD Work Plan, Settling Defendants shall submit to EPA and the
23 State a work plan for the performance of the Remedial Action at
24 the Site ("Remedial Action Work Plan"). The Remedial Action Work
25 Plan shall provide for construction of the remedy, in accordance
26 with the SOW, as set forth in the design plans and specifications
27 in the approved final design submittal. Upon its approval by
28 EPA, and to the extent not inconsistent with this Consent Decree,

1 the ROD, and the SOW, the Remedial Action Work Plan shall be
2 incorporated into and become enforceable under this Consent
3 Decree. With the Remedial Action Work Plan, Settling Defendants
4 shall submit to EPA and the State a Health and Safety Plan for
5 field activities required by the Remedial Action Work Plan which
6 conforms to the applicable Occupational Safety and Health
7 Administration and EPA requirements including, but not limited
8 to, 29 C.F.R. § 1910.120.

9 b. The Remedial Action Work Plan shall include the
10 following: (1) the schedule for completion of the Remedial
11 Action; (2) method for selection of the contractor; and (3)
12 schedule for developing and submitting other required Remedial
13 Action plans. The Remedial Action Work Plan also shall include a
14 schedule for implementation of all Remedial Action tasks
15 identified in the final design submittal and shall identify the
16 initial formulation of the Settling Defendants' Remedial Action
17 Project Team (including, but not limited to, the Supervising
18 Contractor).

19 c. Upon approval of the Remedial Action Work Plan by
20 EPA, after a reasonable opportunity for review and comment by the
21 State, Settling Defendants shall implement the activities
22 required under the Remedial Action Work Plan. The Settling
23 Defendants shall submit to EPA and the State all plans,
24 submittals, or other deliverables required under the approved
25 Remedial Action Work Plan in accordance with the approved
26 schedule for review and approval pursuant to Section XII
27 (Submissions Requiring Agency Approval). Unless otherwise
28 directed by EPA, Settling Defendants shall not commence physical

1 on-site activities at the Site prior to approval of the Remedial
2 Action Work Plan.]

3 16. The Work performed by the Settling Defendants pursuant
4 to this Consent Decree shall include the obligation to achieve
5 the Performance Standards.

6 17. Settling Defendants acknowledge and agree that nothing
7 in this Consent Decree, the SOW, or the deliverables constitutes
8 a warranty or representation of any kind by Plaintiffs that
9 compliance with the work requirements set forth in the SOW and
10 the deliverables will achieve the Performance Standards.
11 Settling Defendants' compliance with the work requirements shall
12 not foreclose Plaintiffs from seeking compliance with all terms
13 and conditions of this Consent Decree, including, but not limited
14 to, the applicable Performance Standards.

15 18. Performance Standards Verification.

16 The Settling Defendants shall submit and, after review and
17 approval by EPA, shall implement a Performance Standards
18 Verification Plan. The contents of the Performance Standards
19 Verification Plan and the schedule for its submittal and
20 implementation, are set forth in or will be developed as
21 described in the SOW. Upon its approval by EPA, and to the
22 extent not inconsistent with this Consent Decree, this Plan shall
23 be incorporated into and become enforceable under this Consent
24 Decree.

25 19. Operation and Maintenance.

26 The Settling Defendants shall submit and, after review and
27 approval by EPA, shall implement an Operation and Maintenance
28 Plan. The contents of the Operation and Maintenance Plan and the

1 schedule for its submittal and implementation, are set forth in
2 or will be developed as described in the SOW. Upon its approval
3 by EPA, and to the extent not inconsistent with this Consent
4 Decree, this Plan shall be incorporated into and become
5 enforceable under this Consent Decree. Unless otherwise directed
6 by EPA, Settling Defendants shall not commence Operation and
7 Maintenance activities at the Site prior to approval of the
8 Operation and Maintenance Plan.

9 20. Settling Defendants shall, prior to any off-Site
10 shipment of Waste Material from the Site to an out-of-state waste
11 management facility; provide written notification to the
12 appropriate state environmental official in the receiving
13 facility's state and to the EPA Project Coordinator of such
14 shipment of Waste Material. However, this notification
15 requirement shall not apply to any off-Site shipments when the
16 total volume of all such shipments will not exceed 10 cubic
17 yards.

18 a. The Settling Defendants shall include in the
19 written notification the following information, where available:
20 (1) the name and location of the facility to which the Waste
21 Material are to be shipped; (2) the type and quantity of the
22 Waste Material to be shipped; (3) the expected schedule for the
23 shipment of the Waste Material; and (4) the method of
24 transportation. The Settling Defendants shall notify the state
25 in which the planned receiving facility is located of major
26 changes in the shipment plan, such as a decision to ship the
27 Waste Material to another facility within the same state, or to a
28 facility in another state.

1 b. The identity of the receiving facility and state
2 will be determined by the Settling Defendants following the award
3 of the contract for Remedial Action construction. The Settling
4 Defendants shall provide the information required by Paragraph
5 20.a as soon as practicable after the award of the contract and
6 before the Waste Material is actually shipped.

7 VII. ADDITIONAL RESPONSE ACTIONS

8 21. In the event that EPA determines or the Settling
9 Defendants propose that additional response actions are necessary
10 to meet the Performance Standards or to carry out the remedy
11 selected in the ROD, notification of such additional response
12 actions shall be provided to the Project Coordinator for the
13 other party(ies).

14 22. Within 30 days of receipt of notice from EPA or
15 Settling Defendants pursuant to Paragraph 21 that additional
16 response actions are necessary (or such longer time as may be
17 specified by EPA), Settling Defendants shall submit for approval
18 by EPA, after reasonable opportunity for review and comment by
19 the State, a work plan for the additional response actions. The
20 plan shall conform to the applicable requirements of Paragraphs
21 14 and 15. Upon approval of the plan pursuant to Section XII
22 (Submissions Requiring Agency Approval), Settling Defendants
23 shall implement the plan for additional response actions in
24 accordance with the schedule contained therein.

25 23. Any additional response actions that Settling
26 Defendants propose are necessary to meet the Performance
27 Standards or to carry out the remedy selected in the ROD shall be
28 subject to approval by EPA, after reasonable opportunity for

1 review and comment by the State, and, if authorized by EPA, shall
2 be completed by Settling Defendants in accordance with plans,
3 specifications, and schedules approved or established by EPA
4 pursuant to Section XII (Submissions Requiring Agency Approval).

5 24. Settling Defendants may invoke the procedures set forth
6 in Section XX (Dispute Resolution) to dispute EPA's determination
7 that additional response actions are necessary to meet the
8 Performance Standards or to carry out the remedy selected in the
9 ROD. Such a dispute shall be resolved pursuant to Paragraphs 68
10 through 71 of this Consent Decree.

11 VIII. U.S. EPA PERIODIC REVIEW

12 25. Settling Defendants shall conduct any studies and
13 investigations as requested by EPA in order to permit EPA to
14 conduct reviews at least every five years as required by Section
15 121(c) of CERCLA and any applicable regulations.

16 26. If required by Sections 113(k)(2) or 117 of CERCLA,
17 Settling Defendants and the public will be provided with an
18 opportunity to comment on any further response actions proposed
19 by EPA as a result of the review conducted pursuant to Section
20 121(c) of CERCLA and to submit written comments for the record
21 during the public comment period. After the period for
22 submission of written comments is closed, the Regional
23 Administrator, EPA Region IX, or his/her delegate will determine
24 in writing whether further response actions are appropriate.

25 27. If the Regional Administrator, EPA Region IX, or
26 his/her delegate determines that information received, in whole
27 or in part, during the review conducted pursuant to Section
28 121(c) of CERCLA, indicates that the Remedial Action is not

1 protective of human health and the environment, the Settling
2 Defendants shall undertake any further response actions EPA has
3 determined are appropriate, unless their liability for such
4 further response actions is barred by the Covenant Not to Sue set
5 forth in Section XXII. Settling Defendants shall submit a plan
6 for such work to EPA for approval in accordance with the
7 procedures set forth in Section VI (Performance of the Work by
8 Settling Defendants) and shall implement the plan approved by
9 EPA. The Settling Defendants may invoke the procedures set forth
10 in Section XX (Dispute Resolution) to dispute (1) EPA's
11 determination that the remedial action is not protective of human
12 health and the environment, (2) EPA's selection of the further
13 response actions ordered as arbitrary and capricious or otherwise
14 not in accordance with law, or (3) EPA's determination that the
15 Settling Defendant's liability for the further response actions
16 requested is reserved in Paragraphs 88, 89, or 91 otherwise not
17 barred by the Covenant Not to Sue set forth in Section XXII.

18 IX. QUALITY ASSURANCE, SAMPLING, and DATA ANALYSIS

19 28. Settling Defendants shall use quality assurance,
20 quality control, and chain of custody procedures for all
21 treatability, design, compliance and monitoring samples in
22 accordance with EPA's "Interim Guidelines and Specifications For
23 Preparing Quality Assurance Project Plans," December 1980, (QAMS-
24 005/80); "Data Quality Objective Guidance," (EPA/540/G87/003 and
25 004); "EPA NEIC Policies and Procedures Manual," May 1978,
26 revised November 1984, (EPA 330/9-78-001-R); and subsequent
27 amendments to such guidelines upon notification by EPA to
28 Settling Defendants of such amendment. Amended guidelines shall

1 | apply only to procedures conducted after such notification.
2 | Prior to the commencement of any monitoring project under this
3 | Consent Decree, Settling Defendants shall submit to EPA for
4 | approval, after a reasonable opportunity for review and comment
5 | by the State, a Quality Assurance Project Plan ("QAPP") to EPA
6 | and the State that is consistent with the SOW, the NCP and
7 | [applicable guidance documents.] If relevant to the proceeding,
8 | the Parties agree that validated sampling data generated in
9 | accordance with the QAPP(s) and reviewed and approved by EPA
10 | shall be admissible as evidence, without objection, in any
11 | proceeding under this Consent Decree. Settling Defendants shall
12 | ensure that EPA and State personnel and their authorized
13 | representatives are allowed access at reasonable times to all
14 | laboratories utilized by Settling Defendants in implementing this
15 | Consent Decree. In addition, Settling Defendants shall ensure
16 | that such laboratories shall analyze all samples submitted by EPA
17 | pursuant to the QAPP for quality assurance monitoring. Settling
18 | Defendants shall ensure that the laboratories they utilize for
19 | the analysis of samples taken pursuant to this Decree perform all
20 | analyses according to accepted EPA methods. Accepted EPA methods
21 | consist of those methods which are documented in the "Contract
22 | Lab Program Statement of Work for Inorganic Analysis" and the
23 | "Contract Lab Program Statement of Work for Organic Analysis,"
24 | dated February 1988, and any amendments made thereto during the
25 | course of the implementation of this Decree. Settling Defendants
26 | shall ensure that all laboratories they use for analysis of
27 | samples taken pursuant to this Consent Decree participate in an
28 | EPA or EPA-equivalent QA/QC program.

1 29. Upon request, the Settling Defendants shall allow split
2 or duplicate samples to be taken by EPA and the State or their
3 authorized representatives. Settling Defendants shall notify EPA
4 and the State not less than 28 days in advance of any sample
5 collection activity unless shorter notice is agreed to by EPA.
6 In addition, EPA and the State shall have the right to take any
7 additional samples that EPA or the State deem necessary. Upon
8 request, EPA and the State shall allow the Settling Defendants to
9 take split or duplicate samples of any samples they take as part
10 of the Plaintiffs' oversight of the Settling Defendant's
11 implementation of the Work.

12 30. Settling Defendants shall submit three copies to EPA
13 and three copies to the State of the results of all sampling
14 and/or tests or other data obtained or generated by or on behalf
15 of Settling Defendants with respect to the Site and/or the
16 implementation of this Consent Decree unless EPA agrees
17 otherwise.

18 31. Notwithstanding any provision of this Consent Decree,
19 the United States and the State hereby retain all of their
20 information gathering and inspection authorities and rights,
21 including enforcement actions related thereto, under CERCLA, RCRA
22 and any other applicable statutes or regulations.

23 X. ACCESS

24 32. Commencing upon the date of lodging of this Consent
25 Decree, the Defendants agree to provide the United States, the
26 State, and their representatives, including EPA and its
27 contractors, access at all reasonable times to the Site and any
28 other property to which access is required for the implementation

1 of this Consent Decree, to the extent access to the property is
2 controlled by the Defendants, for the purposes of conducting any
3 activity related to this Consent Decree including, but not
4 limited to:

- 5 a. Monitoring the Work;
- 6 b. Verifying any data or information submitted to the
7 United States;
- 8 c. Conducting investigations relating to
9 contamination at or near the Site;
- 10 d. Obtaining samples;
- 11 e. Assessing the need for, planning, or implementing
12 additional response actions at or near the Site;
- 13 f. Inspecting and copying records, operating logs,
14 contracts, or other documents maintained or generated by Settling
15 Defendants or their agents, consistent with Section XXV; and
- 16 g. Assessing Settling Defendants' compliance with
17 this Consent Decree.

18 33. To the extent that the Site or any other property to
19 which access is required for the implementation of this Consent
20 Decree is owned or controlled by persons other than Settling
21 Defendants, Settling Defendants shall use best efforts to secure
22 from such persons access for Settling Defendants, as well as for
23 the United States and the State and their representatives,
24 including, but not limited to, their contractors, as necessary to
25 effectuate this Consent Decree. For purposes of this Paragraph
26 "best efforts" includes the payment of reasonable sums of money
27 in consideration of access. If any access required to complete
28 the Work is not obtained within 45 days of the date of lodging of

1 this Consent Decree, or within 45 days of the date EPA notifies
2 the Settling Defendants in writing that additional access beyond
3 that previously secured is necessary, Settling Defendants shall
4 promptly notify the United States, and shall include in that
5 notification a summary of the steps Settling Defendants have
6 taken to attempt to obtain access. The United States or the
7 State may, as it deems appropriate, assist Settling Defendants in
8 obtaining access. Settling Defendants shall reimburse the United
9 States and the State, in accordance with the procedures in
10 Section XVII (Reimbursement and Payment of Response Costs), for
11 all costs incurred by the United States in obtaining access.

12 34. Notwithstanding any provision of this Consent Decree,
13 the United States and the State retain all of their access
14 authorities and rights, including enforcement authorities related
15 thereto, under CERCLA, RCRA and any other applicable statute or
16 regulations.

17 XI. REPORTING REQUIREMENTS

18 35. In addition to any other requirement of this Consent
19 Decree, Settling Defendants shall submit to EPA and the State
20 3 copies of written monthly progress reports that: (a) describe
21 the actions which have been taken toward achieving compliance
22 with this Consent Decree during the previous month; (b) include a
23 summary of all results of sampling and tests and all other data
24 received or generated by Settling Defendants or their contractors
25 or agents in the previous month; (c) identify all work plans,
26 plans and other deliverables required by this Consent Decree
27 completed and submitted during the previous month; (d) describe
28 all actions, including, but not limited to, data collection and

1 implementation of work plans, which are scheduled for the next
2 six weeks and provide other information relating to the progress
3 of construction, including, but not limited to, critical path
4 diagrams, Gantt charts and Pert charts; (e) include information
5 regarding percentage of completion, unresolved delays encountered
6 or anticipated that may affect the future schedule for
7 implementation of the Work, and a description of efforts made to
8 mitigate those delays or anticipated delays; (f) include any
9 modifications to the work plans or other schedules that Settling
10 Defendants have proposed to EPA or that have been approved by
11 EPA; and (g) describe all activities undertaken in support of the
12 Community Relations Plan during the previous month and those to
13 be undertaken in the next six weeks. Settling Defendants shall
14 submit these progress reports to EPA and the State by the tenth
15 day of every month following the lodging of this Consent Decree
16 until EPA notifies the Settling Defendants pursuant to Paragraph
17 52.b of Section XV (Certification of Completion). If requested
18 by EPA or the State, Settling Defendants shall also provide
19 briefings for EPA and the State to discuss the progress of the
20 Work.

21 36. The Settling Defendants shall notify EPA of any change
22 in the schedule described in the monthly progress report for the
23 performance of any activity, including, but not limited to, data
24 collection and implementation of work plans, no later than seven
25 days prior to the scheduled or actual performance of the
26 activity, whichever is earlier.

27 37. Upon the occurrence of any event during performance of
28 the Work that Settling Defendants are required to report pursuant

1 to Section 103 of CERCLA or Section 304 of the Emergency Planning
2 and Community Right-to-know Act (EPCRA), 42 U.S.C. §11004,
3 Settling Defendants shall within 24 hours of the onset of such
4 event orally notify the EPA Project Coordinator or the Alternate
5 EPA Project Coordinator (in the event of the unavailability of
6 the EPA Project Coordinator), or, in the event that neither the
7 EPA Project Coordinator or Alternate EPA Project Coordinator is
8 available, the Emergency Response Section, Region IX, United
9 States Environmental Protection Agency. These reporting
10 requirements are in addition to the reporting required by CERCLA
11 Section 103 or EPCRA Section 304.

12 38. Within 20 days of the onset of such an event, Settling
13 Defendants shall furnish to Plaintiffs a written report, signed
14 by the Settling Defendant's Project Coordinator, setting forth
15 the events which occurred and the measures taken, and to be
16 taken, in response thereto. Within 30 days of the conclusion of
17 such an event, Settling Defendants shall submit a report setting
18 forth all actions taken in response thereto.

19 39. Settling Defendants shall submit 3 copies of all plans,
20 reports, and data required by the SOW, the Remedial Design Work
21 Plan, the Remedial Action Work Plan, or any other approved plans
22 to EPA in accordance with the schedules set forth in such plans.
23 Settling Defendants shall simultaneously submit 3 copies of all
24 such plans, reports and data to the State.

25 40. All reports and other documents submitted by Settling
26 Defendants to EPA (other than the monthly progress reports
27 referred to above) which purport to document Settling Defendants'
28 compliance with the terms of this Consent Decree shall be signed

1 by an authorized representative of the Settling Defendants.

2 XII. SUBMISSIONS REQUIRING AGENCY APPROVAL

3 41. After review of any plan, report or other item which is
4 required to be submitted for approval pursuant to this Consent
5 Decree, EPA, after reasonable opportunity for review and comment
6 by the State, shall: (a) approve, in whole or in part, the
7 submission; (b) approve the submission upon specified conditions;
8 (c) modify the submission to cure the deficiencies; (d)
9 disapprove, in whole or in part, the submission, directing that
10 the Settling Defendants modify the submission; or (e) any
11 combination of the above.

12 42. In the event of approval, approval upon conditions, or
13 modification by EPA, pursuant to Paragraph 41(a), (b), or (c),
14 Settling Defendants shall proceed to take any action required by
15 the plan, report, or other item, as approved or modified by EPA
16 subject only to their right to invoke the Dispute Resolution
17 procedures set forth in Section XX (Dispute Resolution) with
18 respect to the modifications or conditions made by EPA. In the
19 event that EPA modifies the submission to cure the deficiencies
20 pursuant to Paragraph 41(c) and the submission has a material
21 defect, EPA retains its right to seek stipulated penalties, as
22 provided in Section XXI.

23 43. a. Upon receipt of a notice of disapproval pursuant
24 to Paragraph 41(d), Settling Defendants shall, within 14 days or
25 such other time as specified by EPA in such notice, correct the
26 deficiencies and resubmit the plan, report, or other item for
27 approval. Any stipulated penalties applicable to the submission,
28 as provided in Section XXI, shall accrue during the 14-day period

1 or otherwise specified period but shall not be payable unless the
2 resubmission is disapproved or modified due to a material defect
3 as provided in Paragraph 44.

4 b. Notwithstanding the receipt of a notice of
5 disapproval pursuant to Paragraph 41(d), Settling Defendants
6 shall proceed, at the direction of EPA, to take any action
7 required by any non-deficient portion of the submission.
8 Implementation of any non-deficient portion of a submission shall
9 not relieve Settling Defendants of any liability for stipulated
10 penalties under Section XXI (Stipulated Penalties).

11 44. In the event that a resubmitted plan, report or other
12 item, or portion thereof, is disapproved by EPA, EPA may again
13 require the Settling Defendants to correct the deficiencies, in
14 accordance with the preceding Paragraphs. EPA also retains the
15 right to amend or develop the plan, report or other item.
16 Settling Defendants shall implement any such plan, report, or
17 item as amended or developed by EPA, subject only to their right
18 to invoke the procedures set forth in Section XX (Dispute
19 Resolution).

20 45. If upon resubmission, a plan, report, or item is
21 disapproved or modified by EPA due to a material defect, Settling
22 Defendants shall be deemed to have failed to submit such plan,
23 report, or item timely and adequately unless the Settling
24 Defendants invoke the dispute resolution procedures set forth in
25 Section XX (Dispute Resolution) and EPA's action is overturned
26 pursuant to that Section. The provisions of Section XX (Dispute
27 Resolution) and Section XXI (Stipulated Penalties) shall govern
28 the implementation of the Work and accrual and payment of any

1 stipulated penalties during Dispute Resolution. If EPA's
2 disapproval or modification is upheld, stipulated penalties shall
3 accrue for such violation from the date on which the initial
4 submission was originally required, as provided in Section XXI.

5 46. All plans, reports, and other items required to be
6 submitted to EPA under this Consent Decree shall, upon approval
7 or modification by EPA, be enforceable under this Consent Decree.
8 In the event EPA approves or modifies a portion of a plan,
9 report, or other item required to be submitted to EPA under this
10 Consent Decree, the approved or modified portion shall be
11 enforceable under this Consent Decree.

12 XIII. PROJECT COORDINATORS

13 47. Within 20 days of lodging this Consent Decree, Settling
14 Defendants, the State and EPA will notify each other, in writing,
15 of the name, address and telephone number of their respective
16 designated Project Coordinators and Alternate Project
17 Coordinators. If a Project Coordinator or Alternate Project
18 Coordinator initially designated is changed, the identity of the
19 successor will be given to the other parties at least 5 working
20 days before the changes occur, unless impracticable, but in no
21 event later than the actual day the change is made. The Settling
22 Defendants' Project Coordinator shall be subject to disapproval
23 by EPA and shall have the technical expertise sufficient to
24 adequately oversee all aspects of the Work. The Settling
25 Defendants' Project Coordinator shall not be an attorney for any
26 of the Settling Defendants in this matter. He or she may assign
27 other representatives, including other contractors, to serve as a
28 Site representative for oversight of performance of daily

1 operations during remedial activities.

2 48. Plaintiffs may designate other representatives,
3 including, but not limited to, EPA and State employees, and
4 federal and State contractors and consultants, to observe and
5 monitor the progress of any activity undertaken pursuant to this
6 Consent Decree. EPA's Project Coordinator and Alternate Project
7 Coordinator shall have the authority lawfully vested in a
8 Remedial Project Manager (RPM) and an On-Scene Coordinator (OSC)
9 by the National Contingency Plan, 40 C.F.R. Part 300. In
10 addition, EPA's Project Coordinator or Alternate Project
11 Coordinator shall have authority, consistent with the National
12 Contingency Plan, to halt any Work required by this Consent
13 Decree and to take any necessary response action when s/he
14 determines that conditions at the Site constitute an emergency
15 situation or may present an immediate threat to public health or
16 welfare or the environment due to release or threatened release
17 of Waste Material.

18 49. EPA's Project Coordinator and the Settling Defendants'
19 Project Coordinator will meet, at a minimum, on a monthly basis.

20 XIV. ASSURANCE OF ABILITY TO COMPLETE WORK

21 50. Within 30 days of entry of this Consent Decree,
22 Settling Defendants shall establish and maintain financial
23 security in the amount of \$5 million in one of the following
24 forms:

25 a. A surety bond guaranteeing performance of the
26 Work;

27 b. One or more irrevocable letters of credit
28 equalling the total estimated cost of the Work;

1 c. A trust fund;

2 d. A guarantee to perform the Work by one or more
3 parent corporations or subsidiaries, or by one or more unrelated
4 corporations that have a substantial business relationship with
5 at least one of the Settling Defendants; or

6 e. A demonstration that one or more of the Settling
7 Defendants satisfy the requirements of 40 C.F.R. Part 264.143(f).

8 51. If the Settling Defendants seek to demonstrate the
9 ability to complete the Work through a guarantee by a third party
10 pursuant to Paragraph 50.d of this Consent Decree, Settling
11 Defendants shall demonstrate that the guarantor satisfies the
12 requirements of 40 C.F.R. Part 264.143(f). If Settling
13 Defendants seek to demonstrate their ability to complete the Work
14 by means of the financial test or the corporate guarantee
15 pursuant to Paragraph 50.d or 50.e, they shall resubmit sworn
16 statements conveying the information required by 40 C.F.R. Part
17 264.143(f) annually, on the anniversary of the effective date of
18 this Consent Decree. In the event that EPA, after a reasonable
19 opportunity for review and comment by the State, determines at
20 any time that the financial assurances provided pursuant to this
21 Section are inadequate, Settling Defendants shall, within 30 days
22 of receipt of notice of EPA's determination, obtain and present
23 to EPA for approval one of the other forms of financial assurance
24 listed in Paragraph 50 of this Consent Decree. Settling
25 Defendants' inability to demonstrate financial ability to
26 complete the Work shall not excuse performance of any activities
27 required under this Consent Decree.

1 XV. CERTIFICATION OF COMPLETION

2 52. Completion of the Remedial Action

3 a. Within 90 days after Settling Defendants conclude
4 that the Remedial Action has been fully performed and the
5 Performance Standards have been attained, Settling Defendants
6 shall schedule and conduct a pre-certification inspection to be
7 attended by Settling Defendants, EPA and the State. If, after
8 the pre-certification inspection, the Settling Defendants still
9 believe that the Remedial Action has been fully performed and the
10 Performance Standards have been attained, they shall submit a
11 written report requesting certification to EPA for approval, with
12 a copy to the State, pursuant to Section XII (Submissions
13 Requiring Agency Approval) within 30 days of the inspection. In
14 the report, a registered professional engineer and the Settling
15 Defendants' Project Coordinator shall state that the Remedial
16 Action has been completed in full satisfaction of the
17 requirements of this Consent Decree. The written report shall
18 include as-built drawings signed and stamped by a professional
19 engineer. The report shall contain the following statement,
20 signed by a responsible corporate official of a Settling
21 Defendant or the Settling Defendants' Project Coordinator:

22 "To the best of my knowledge, after thorough
23 investigation, I certify that the information contained
24 in or accompanying this submission is true, accurate
25 and complete. I am aware that there are significant
penalties for submitting false information, including
the possibility of fine and imprisonment for knowing
violations."

26 If, after completion of the pre-certification inspection and
27 receipt and review of the written report, EPA, after reasonable
28 opportunity to review and comment by the State, determines that

1 the Remedial Action or any portion thereof has not been completed
2 in accordance with this Consent Decree or that the Performance
3 Standards have not been achieved, EPA will notify Settling
4 Defendants in writing of the activities that must be undertaken
5 to complete the Remedial Action and achieve the Performance
6 Standards. EPA will set forth in the notice a schedule for
7 performance of such activities consistent with the Consent Decree
8 and the SOW or require the Settling Defendants to submit a
9 schedule to EPA for approval pursuant to Section XII (Submissions
10 Requiring Agency Approval). Settling Defendants shall perform
11 all activities described in the notice in accordance with the
12 specifications and schedules established pursuant to this
13 Paragraph, subject to their right to invoke the dispute
14 resolution procedures set forth in Section XX (Dispute
15 Resolution).

16 b. If EPA concludes, based on the initial or any
17 subsequent report requesting Certification of Completion and
18 after a reasonable opportunity for review and comment by the
19 State, that the Remedial Action has been fully performed in
20 accordance with this Consent Decree and that the Performance
21 Standards have been achieved, EPA will so certify in writing to
22 Settling Defendants. This certification shall constitute the
23 Certification of Completion of the Remedial Action for purposes
24 of this Consent Decree, including, but not limited to, Section
25 XXII (Covenants Not to Sue by Plaintiffs). Certification of
26 Completion of the Remedial Action shall not affect Settling
27 Defendants' obligations under this Consent Decree.
28

1 53. Completion of the Work

2 a. Within 90 days after Settling Defendants conclude
3 that all phases of the Work (including O & M), have been fully
4 performed, Settling Defendants shall schedule and conduct a pre-
5 certification inspection to be attended by Settling Defendants,
6 EPA and the State. If, after the pre-certification inspection,
7 the Settling Defendants still believe that the Work has been
8 fully performed, Settling Defendants shall submit a written
9 report by a registered professional engineer stating that the
10 Work has been completed in full satisfaction of the requirements
11 of this Consent Decree. The report shall contain the following
12 statement, signed by a responsible corporate official of a
13 Settling Defendant or the Settling Defendants' Project
14 Coordinator:

15 "To the best of my knowledge, after thorough
16 investigation, I certify that the information contained
17 in or accompanying this submission is true, accurate
18 and complete. I am aware that there are significant
penalties for submitting false information, including
the possibility of fine and imprisonment for knowing
violations."

19 If, after review of the written report, EPA, after reasonable
20 opportunity to review and comment by the State, determines that
21 any portion of the Work has not been completed in accordance with
22 this Consent Decree, EPA will notify Settling Defendants in
23 writing of the activities that must be undertaken to complete the
24 Work. EPA will set forth in the notice a schedule for
25 performance of such activities consistent with the Consent Decree
26 and the SOW or require the Settling Defendants to submit a
27 schedule to EPA for approval pursuant to Section XII (Submissions
28 Requiring Agency Approval). Settling Defendants shall perform

1 all activities described in the notice in accordance with the
2 specifications and schedules established therein, subject to
3 their right to invoke the dispute resolution procedures set forth
4 in Section XX (Dispute Resolution).

5 b. If EPA concludes, based on the initial or any
6 subsequent request for Certification of Completion by Settling
7 Defendants and after a reasonable opportunity for review and
8 comment by the State, that the Work has been fully performed in
9 accordance with this Consent Decree, EPA will so notify the
10 Settling Defendants in writing.

11 XVI. EMERGENCY RESPONSE

12 54. In the event of any action or occurrence during the
13 performance of the Work which causes or threatens a release of
14 Waste Material from the Site that constitutes an emergency
15 situation or may present an immediate threat to public health or
16 welfare or the environment, Settling Defendants shall, subject to
17 Paragraph 55, immediately take all appropriate action to prevent,
18 abate, or minimize such release or threat of release, and shall
19 immediately notify the EPA's Project Coordinator, or, if the
20 Project Coordinator is unavailable, EPA's Alternate Project
21 Coordinator. If neither of these persons is available, the
22 Settling Defendants shall notify the EPA Emergency Response Unit,
23 Region IX. Settling Defendants shall take such actions in
24 consultation with EPA's Project Coordinator or other available
25 authorized EPA officer and in accordance with all applicable
26 provisions of the Health and Safety Plans, the Contingency Plans,
27 and any other applicable plans or documents developed pursuant to
28 the SOW. To the extent feasible given the circumstances of the

1 emergency, EPA shall communicate with ADEQ regarding the response
2 action and coordinate with local emergency authorities. In the
3 event that Settling Defendants fail to take appropriate response
4 action as required by this Section, and EPA or, as appropriate,
5 the State, takes such action instead, Settling Defendants shall
6 reimburse EPA and the State all costs of the response action not
7 inconsistent with the NCP pursuant to Section XVII (Reimbursement
8 and Payment of Response Costs).

9 55. Nothing in the preceding Paragraph or in this Consent
10 Decree shall be deemed to limit any authority of the United
11 States, or the State, to take, direct, or order all appropriate
12 action or to seek an order from the Court to protect human health
13 and the environment or to prevent, abate, respond to, or minimize
14 an actual or threatened release of Waste Material on, at, or from
15 the Site.

16 XVII. REIMBURSEMENT AND PAYMENT OF RESPONSE COSTS

17 56. Within 30 days of the effective date of this Consent
18 Decree, Settling Defendants shall:

19 a. Pay to the United States \$ 128,895.30, in the form
20 of a certified check or checks made payable to "EPA Hazardous
21 Substance Superfund," and referencing "Hassayampa Landfill
22 Superfund Site, SSID #9TB8" and DOJ Case Number _____, in
23 reimbursement of Past Response Costs. The Settling Defendants
24 shall forward the certified check(s) to:

25 U.S. Environmental Protection Agency, Region IX
26 ATTENTION: Superfund Accounting
27 P. O. Box 360863M
Pittsburgh, PA 15251

28 and shall send copies of the check to the United States as

1 specified in Section XXVII (Notices and Submissions) and to:

2 Tom Dunkelman, H-7-1
3 U.S. Environmental Protection Agency, Region IX
4 75 Hawthorne Street
5 San Francisco, CA 94105

6 b. Pay to the State \$_____ in the form of a
7 certified check or checks made payable to _____, in
8 reimbursement of Past Response Costs incurred by the State. The
9 Settling Defendants shall send the certified check(s) to
10 _____.

11 57. Within 30 days of the effective date of this Consent
12 Decree, each De Minimis Settling Defendant shall pay the amount
13 set forth in Appendix F to this Decree, in the manner provided in
14 Appendix F.

15 58. Settling Defendants shall reimburse the United States
16 and the State for all Future Response Costs not inconsistent with
17 the National Contingency Plan incurred by the United States and
18 the State. The United States and the State will each send
19 Settling Defendants a bill requiring payment and a copy of the
20 EPA Superfund Cost Summary documentation which includes direct
21 and indirect costs incurred by EPA, DOJ and the State and their
22 contractors on a periodic basis, no more frequently than
23 annually. Settling Defendants shall make all payments within 30
24 days of Settling Defendants' receipt of each bill requiring
25 payment, except as otherwise provided in Paragraph 59. The
26 Settling Defendants shall make all payments required by this
27 Paragraph in the manner described in Paragraph 56.

28 59. Settling Defendants may contest payment of any Future
Response Costs under Paragraph 58 if they determine that the

1 United States or the State has made an accounting error or if
2 they allege that a cost item that is included represents costs
3 that are inconsistent with the NCP. Such objection shall be made
4 in writing within 30 days of receipt of the bill and must be sent
5 to the United States (if the United States' accounting is being
6 disputed) or the State (if the State's accounting is being
7 disputed) pursuant to Section XXVII (Notices and Submissions).
8 Any such objection shall specifically identify the contested
9 Future Response Costs and the basis for objection. In the event
10 of an objection, the Settling Defendants shall within the 30 day
11 period pay all uncontested Future Response Costs to the United
12 States or the State in the manner described in Paragraph 56.
13 Simultaneously, the Settling Defendants shall establish an
14 interest bearing escrow account in a federally-insured bank duly
15 chartered in the State of Arizona and remit to that escrow
16 account funds equivalent to the amount of the contested Future
17 Response Costs. The Settling Defendants shall send to the United
18 States, as provided in Section XXVII (Notices and Submissions),
19 and the State a copy of the transmittal letter and check paying
20 the uncontested Future Response Costs, and a copy of the
21 correspondence that establishes and funds the escrow account,
22 including, but not limited to, information containing the
23 identity of the bank and bank account under which the escrow
24 account is established as well as a bank statement showing the
25 initial balance of the escrow account. Simultaneously with
26 establishment of the escrow account, the Settling Defendants
27 shall initiate the Dispute Resolution procedures in Section XX
28 (Dispute Resolution). If the United States or the State prevails

1 in the dispute, within 5 days of the resolution of the dispute,
2 the Settling Defendants shall pay the sums due (with accrued
3 interest) to the United States or the State, if State costs are
4 disputed, in the manner described in Paragraph 56. If the
5 Settling Defendants prevail concerning any aspect of the
6 contested costs, the Settling Defendants shall pay that portion
7 of the costs (plus associated accrued interest) for which they
8 did not prevail to the United States or the State, if State costs
9 are disputed, in the manner described in Paragraph 56; Settling
10 Defendants shall be disbursed any balance of the escrow account.
11 The dispute resolution procedures set forth in this Paragraph in
12 conjunction with the procedures set forth in Section XX (Dispute
13 Resolution) shall be the exclusive mechanisms for resolving
14 disputes regarding the Settling Defendants' obligation to
15 reimburse the United States and the State for their Future
16 Response Costs.

17 60. In the event that the payments required by Paragraph 56
18 are not made within 30 days of the effective date of this Consent
19 Decree or the payments required by Paragraph 58 are not made
20 within 30 days of the Settling Defendants' receipt of the bill,
21 Settling Defendants shall pay interest on the unpaid balance at
22 the rate established pursuant to Section 107(a) of CERCLA, 42
23 U.S.C. § 9607. The interest to be paid on Past Response Costs
24 shall begin to accrue on the effective date of the Consent
25 Decree. The interest on Future Response Costs shall begin to
26 accrue on the date of the Settling Defendants' receipt of the
27 bill. Interest shall accrue at the rate specified through the
28 date of the Settling Defendant's payment. Payments of interest

1 made under this Paragraph shall be in addition to such other
2 remedies or sanctions available to Plaintiffs by virtue of
3 Settling Defendants' failure to make timely payments under this
4 Section.

5 XVIII. INDEMNIFICATION AND INSURANCE

6 61. The United States and the State do not assume any
7 liability by entering into this agreement or by virtue of any
8 designation of Settling Defendants as EPA's authorized
9 representatives under Section 104(e) of CERCLA. Settling
10 Defendants shall indemnify, save and hold harmless the United
11 States, the State, and their officials, agents, employees,
12 contractors, subcontractors, or representatives for or from any
13 and all claims or causes of action arising from, or on account
14 of, acts or omissions of Settling Defendants, their officers,
15 directors, employees, agents, contractors, subcontractors, and
16 any persons acting on their behalf or under their control, in
17 carrying out activities pursuant to this Consent Decree,
18 including, but not limited to, any claims arising from any
19 designation of Settling Defendants as EPA's authorized
20 representatives under Section 104(e) of CERCLA. Further, the
21 Settling Defendants agree to pay the United States and the State
22 all costs they incur including, but not limited to, attorneys
23 fees and other expenses of litigation and settlement arising
24 from, or on account of, claims made against the United States
25 based on acts or omissions of Settling Defendants, their
26 officers, directors, employees, agents, contractors,
27 subcontractors, and any persons acting on their behalf or under
28 their control, in carrying out activities pursuant to this

1 Consent Decree. Neither the United States nor the State shall be
2 held out as a party to any contract entered into by or on behalf
3 of Settling Defendants in carrying out activities pursuant to
4 this Consent Decree. Neither the Settling Defendants nor any
5 such contractor shall be considered an agent of the United States
6 or the State.

7 62. Settling Defendants waive all claims against the United
8 States and the State for damages or reimbursement or for setoff
9 of any payments made or to be made to the United States or the
10 State, arising from or on account of any contract, agreement, or
11 arrangement between any one or more of Settling Defendants and
12 any person for performance of Work on or relating to the Site,
13 including, but not limited to, claims on account of construction
14 delays. In addition, Settling Defendants shall indemnify and
15 hold harmless the United States and the State with respect to any
16 and all claims for damages or reimbursement arising from or on
17 account of any contract, agreement, or arrangement between any
18 one or more of Settling Defendants and any person for performance
19 of Work on or relating to the Site, including, but not limited
20 to, claims on account of construction delays.

21 63. No later than 15 days before commencing any on-site
22 Work, Settling Defendants shall secure, and shall maintain until
23 the first anniversary of EPA's Certification of Completion of the
24 Work pursuant to Paragraph 53.b of Section XV (Certification of
25 Completion), comprehensive general liability insurance and
26 automobile insurance with limits of two million dollars, combined
27 single limit naming as additional insured the United States and
28 the State. In addition, for the duration of this Consent Decree,

1 Settling Defendants shall satisfy, or shall ensure that their
2 contractors or subcontractors satisfy, all applicable laws and
3 regulations regarding the provision of worker's compensation
4 insurance for all persons performing the Work on behalf of
5 Settling Defendants in furtherance of this Consent Decree. Prior
6 to commencement of the Work under this Consent Decree, Settling
7 Defendants shall provide to EPA and the State certificates of
8 such insurance and a copy of each insurance policy. Settling
9 Defendants shall resubmit such certificates and copies of
10 policies each year on the anniversary of the effective date of
11 this Consent Decree. If Settling Defendants demonstrate by
12 evidence satisfactory to EPA and the State that any contractor or
13 subcontractor maintains insurance equivalent to that described
14 above, or insurance covering the same risks but in a lesser
15 amount, then, with respect to that contractor or subcontractor,
16 Settling Defendants need provide only that portion of the
17 insurance described above which is not maintained by the
18 contractor or subcontractor.

19 XIX. FORCE MAJEURE

20 64. "Force majeure," for purposes of this Consent Decree,
21 is defined as any event arising from causes beyond the control of
22 the Settling Defendants or of any entity controlled by Settling
23 Defendants, including, but not limited to, their contractors and
24 subcontractors, that delays or prevents the performance of any
25 obligation under this Consent Decree despite Settling Defendants'
26 best efforts to fulfill the obligation. The requirement that the
27 Settling Defendants exercise "best efforts to fulfill the
28 obligation" includes using best efforts to anticipate any

1 potential force majeure event and best efforts to address the
2 effects of any potential force majeure event (1) as it is
3 occurring and (2) following the potential force majeure event,
4 such that the delay is minimized to the greatest extent possible.
5 "Force Majeure" does not include financial inability to complete
6 the Work or a failure to attain the Performance Standards.

7 65. If any event occurs or has occurred that may delay the
8 performance of any obligation under this Consent Decree, whether
9 or not caused by a force majeure event, the Settling Defendants
10 shall notify orally EPA's Project Coordinator or, in his or her
11 absence, EPA's Alternate Project Coordinator or, in the event
12 both of EPA's designated representatives are unavailable, the
13 Director of the Hazardous Waste Management Division, EPA Region
14 IX, within 48 hours of when Settling Defendants first knew or
15 should have known that the event might cause a delay. Within 5
16 days thereafter, Settling Defendants shall provide in writing to
17 EPA and the State an explanation and description of the reasons
18 for the delay; the anticipated duration of the delay; all actions
19 taken or to be taken to prevent or minimize the delay; a schedule
20 for implementation of any measures to be taken to prevent or
21 mitigate the delay or the effect of the delay; the Settling
22 Defendants' rationale for attributing such delay to a force
23 majeure event if they intend to assert such a claim; and a
24 statement as to whether, in the opinion of the Settling
25 Defendants, such event may cause or contribute to an endangerment
26 to public health, welfare or the environment. The Settling
27 Defendants shall include with any notice all available
28 documentation supporting their claim that the delay was

1 attributable to a force majeure. Failure to comply with the
2 above requirements shall preclude Settling Defendants from
3 asserting any claim of force majeure for that event. Settling
4 Defendants shall be deemed to have notice of any circumstance of
5 which their contractors or subcontractors had or should have had
6 notice.

7 66. If EPA, after a reasonable opportunity for review and
8 comment by the State, agrees that the delay or anticipated delay
9 is attributable to a force majeure event, the time for
10 performance of the obligations under this Consent Decree that are
11 affected by the force majeure event will be extended by EPA,
12 after a reasonable opportunity for review and comment by the
13 State, for such time as is necessary to complete those
14 obligations. An extension of the time for performance of the
15 obligations affected by the force majeure event shall not, of
16 itself, extend the time for performance of any other obligation.
17 If EPA, after a reasonable opportunity for review and comment by
18 the State, does not agree that the delay or anticipated delay has
19 been or will be caused by a force majeure event, EPA will notify
20 the Settling Defendants in writing of its decision. If EPA,
21 after a reasonable opportunity for review and comment by the
22 State, agrees that the delay is attributable to a force majeure
23 event, EPA will notify the Settling Defendants in writing of the
24 length of the extension, if any, for performance of the
25 obligations affected by the force majeure event.

26 67. If the Settling Defendants elect to invoke the dispute
27 resolution procedures set forth in Section XX (Dispute
28 Resolution), they shall do so no later than 15 days after receipt

1 of EPA's notice. In any such proceeding, Settling Defendants
2 shall have the burden of demonstrating by a preponderance of the
3 evidence that the delay or anticipated delay has been or will be
4 caused by a force majeure event, that the duration of the delay
5 or the extension sought was or will be warranted under the
6 circumstances, that best efforts were exercised to avoid and
7 mitigate the effects of the delay, and that Settling Defendants
8 complied with the requirements of Paragraphs 64 and 65, above.
9 If Settling Defendants carry this burden, the delay at issue
10 shall be deemed not to be a violation by Settling Defendants of
11 the affected obligation of this Consent Decree identified to EPA
12 and the Court.

13 XX. DISPUTE RESOLUTION

14 68. Unless otherwise expressly provided for in this Consent
15 Decree, the dispute resolution procedures of this Section shall
16 be the exclusive mechanism to resolve disputes arising under or
17 with respect to this Consent Decree. However, the procedures set
18 forth in this Section shall not apply to actions by the United
19 States to enforce obligations of the Settling Defendants that
20 have not been disputed in accordance with this Section.

21 69. Any dispute which arises under or with respect to this
22 Consent Decree shall in the first instance be the subject of
23 informal negotiations between the parties to the dispute. The
24 period for informal negotiations shall not exceed 20 days from
25 the time the dispute arises, unless it is modified by written
26 agreement of the parties to the dispute. The dispute shall be
27 considered to have arisen when one party sends the other parties
28 a written Notice of Dispute.

1 70. a. In the event that the parties cannot resolve a
2 dispute by informal negotiations under the preceding Paragraph,
3 then the position advanced by EPA shall be considered binding
4 unless, within 10 days after the conclusion of the informal
5 negotiation period, Settling Defendants invoke the formal dispute
6 resolution procedures of this Section by serving on the United
7 States and the State a written Statement of Position on the
8 matter in dispute, including, but not limited to, any factual
9 data, analysis or opinion supporting that position and any
10 supporting documentation relied upon by the Settling Defendants.
11 The Statement of Position shall specify the Settling Defendants'
12 position as to whether formal dispute resolution should proceed
13 under Paragraph 71 or 72.

14 b. Within fourteen (14) days after receipt of
15 Settling Defendants' Statement of Position, EPA will serve on
16 Settling Defendants its Statement of Position, including, but not
17 limited to, any factual data, analysis, or opinion supporting
18 that position and all supporting documentation relied upon by
19 EPA. EPA's Statement of Position shall include a statement as to
20 whether formal dispute resolution should proceed under Paragraph
21 71 or 72.

22 c. If there is disagreement between EPA and the
23 Settling Defendants as to whether dispute resolution should
24 proceed under Paragraph 71 or 72, the parties to the dispute
25 shall follow the procedures set forth in the paragraph determined
26 by EPA to be applicable. However, if the Settling Defendants
27 ultimately appeal to the court to resolve the dispute, the Court
28 shall determine which paragraph is applicable in accordance with

1 the standards of applicability set forth in Paragraphs 71 and 72.

2 71. Formal dispute resolution for disputes pertaining to
3 the selection or adequacy of any response action and all other
4 disputes that are accorded review on the administrative record
5 under applicable principles of administrative law shall be
6 conducted pursuant to the procedures set forth in this Paragraph.
7 For purposes of this Paragraph, the adequacy of any response
8 action includes, without limitation: (1) the adequacy or
9 appropriateness of plans, procedures to implement plans, or any
10 other items requiring approval by EPA under this Consent Decree;
11 and (2) the adequacy of the performance of response actions taken
12 pursuant to this Consent Decree. Nothing in this Consent Decree
13 shall be construed to allow any dispute by Settling Defendants
14 regarding the validity of the ROD's provisions.

15 a. An administrative record of the dispute shall be
16 maintained by EPA and shall contain all statements of position,
17 including supporting documentation, submitted pursuant to this
18 Paragraph. Where appropriate, EPA may allow submission of
19 supplemental statements of position by the parties to the
20 dispute.

21 b. The Director of the Hazardous Waste Management
22 Division, EPA Region IX, will issue a final administrative
23 decision resolving the dispute based on the administrative record
24 described in Paragraph 71.a. This decision shall be binding upon
25 the Settling Defendants, subject only to the right to seek
26 judicial review pursuant to Paragraph 71.c and 71.d.

27 c. Any administrative decision made by EPA pursuant
28 to Paragraph 71.b shall be reviewable by this Court, provided

1 that a notice of judicial appeal is filed by the Settling
2 Defendants with the Court and served on all Parties within 10
3 days of receipt of EPA's decision. The notice of judicial appeal
4 shall include a description of the matter in dispute, the efforts
5 made by the parties to resolve it, the relief requested, and the
6 schedule, if any, within which the dispute must be resolved to
7 ensure orderly implementation of this Consent Decree. The United
8 States may file a response to Settling Defendants' notice of
9 judicial appeal.

10 d. In proceedings on any dispute governed by this
11 Paragraph, Settling Defendants shall have the burden of
12 demonstrating that the decision of the Hazardous Waste Management
13 Division Director is arbitrary and capricious or otherwise not in
14 accordance with law. Judicial review of EPA's decision shall be
15 on the administrative record compiled pursuant to Paragraph 71.a.

16 72. Formal dispute resolution for disputes that neither
17 pertain to the selection or adequacy of any response action nor
18 are otherwise accorded review on the administrative record under
19 applicable principles of administrative law, shall be governed by
20 this Paragraph.

21 a. Following receipt of Settling Defendants'
22 Statement of Position submitted pursuant to Paragraph 70, the
23 Director of the Hazardous Waste Management Division, EPA Region
24 IX, will issue a final decision resolving the dispute. The
25 Hazardous Waste Management Division Director's decision shall be
26 binding on the Settling Defendants unless, within 10 days of
27 receipt of the decision, the Settling Defendants file with the
28 Court and serve on the parties a notice of judicial appeal.

1 setting forth the matter in dispute, the efforts made by the
2 parties to resolve it, the relief requested, and the schedule, if
3 any, within which the dispute must be resolved to ensure orderly
4 implementation of the Consent Decree. The United States may file
5 a response to Settling Defendants' notice of judicial appeal.

6 b. Notwithstanding Paragraph M of Section I
7 (Background) of this Consent Decree, judicial review of any
8 dispute governed by this Paragraph shall be governed by
9 applicable provisions of law.

10 73. The invocation of formal dispute resolution procedures
11 under this Section shall not extend, postpone or affect in any
12 way any obligation of the Settling Defendants under this Consent
13 Decree not directly in dispute, unless EPA or the Court agrees
14 otherwise. Stipulated penalties with respect to the disputed
15 matter shall continue to accrue but payment shall be stayed
16 pending resolution of the dispute as provided in Paragraph 83.
17 Notwithstanding the stay of payment, stipulated penalties shall
18 accrue from the first day of noncompliance with any applicable
19 provision of this Consent Decree. In the event that the Settling
20 Defendant does not prevail on the disputed issue, stipulated
21 penalties shall be assessed and paid as provided in Section XXI
22 (Stipulated Penalties).

23 XXI. STIPULATED PENALTIES

24 74. Settling Defendants shall be liable for stipulated
25 penalties in the amounts set forth in Paragraphs 75 and 76 to the
26 United States and the State for failure to comply with the
27 requirements of this Consent Decree specified below, unless
28 excused under Section XIX (Force Majeure). "Compliance" by

Settling Defendants shall include completion of the activities under this Consent Decree or any work plan or other plan approved under this Consent Decree identified below in accordance with all applicable requirements of law, this Consent Decree, the SOW, and any plans or other documents approved by EPA pursuant to this Consent Decree and within the specified time schedules established by and approved under this Consent Decree.

75. a. The following stipulated penalties shall be payable per violation per day to the United States and the State where EPA determines that there has been a noncompliance identified in Subparagraph b:

Penalty Per Violation Per Day	Period of Noncompliance
\$ 7,500.	1st day through 7th day
\$ 15,000.	8th day through 14th day
\$ 25,000.	15th day and beyond

b. i. Failure to submit timely or adequate Additional Investigation Work Plan, Additional Investigation Report, Treatability Study Work Plan, Treatability Study Report, Remedial Design Work Plan, Preliminary Design, Prefinal Design, Final Design, Remedial Action Work Plan, Final Construction Report, Remedial Action Report, or Performance Standards Verification Plan, as these deliverables are defined in the SOW; unauthorized activity at the Site; or failure to timely commence, perform, or complete field work, construction or operation of any element of the Work.

ii. The failure of any Settling Defendant or De Minimis Settling Defendant to make timely payment of amounts to

1 be paid under Section XVII.

2 76. The following stipulated penalties shall be payable per
3 violation per day to the United States and the State where EPA
4 determines that there has been a failure to submit timely or
5 adequate reports or other written documents pursuant to
6 Paragraphs 12, 13, 14, 15, 18 or 19, other than documents listed
7 in Paragraph 75.b above:

Penalty Per Violation Per Day	Period of Noncompliance
\$ 5,000.	1st day through 7th day
\$ 10,000.	8th day through 14th day
\$ 20,000.	15th day and beyond

12
13 77. The following stipulated penalties shall be payable per
14 violation per day to the United States where EPA determines there
15 has been any noncompliance with the requirements of this Consent
16 Decree concerning all other reports, plans, data gathering and
17 well installation activities, or for any other violations of this
18 Consent Decree, including but not limited to, all implementation
19 schedules and performance submission dates, except those subject
20 to penalties under Paragraphs 75.b and 76 above:

Penalty Per Violation Per Day	Period of Noncompliance
\$ 3,500.	1st day through 7th day
\$ 7,500.	8th day through 14th day
\$ 15,000.	15th day and beyond

25
26 78. In the event that EPA assumes performance of a portion
27 or all of the Work pursuant to Paragraph 93 of Section XXII
28

1 (Covenants Not to Sue by Plaintiffs), Settling Defendants shall
2 be liable for a stipulated penalty in the amount of \$2 million.

3 79. All penalties shall begin to accrue on the day after
4 the complete performance is due or the day a violation occurs,
5 and shall continue to accrue through the final day of the
6 correction of the noncompliance or completion of the activity.
7 Nothing herein shall prevent the simultaneous accrual of separate
8 penalties for separate violations of this Consent Decree.

9 80. Following EPA's determination that Defendants have
10 failed to comply with a requirement of this Consent Decree, EPA
11 may give Defendants written notification of the same and describe
12 the noncompliance. EPA and the State may send the Defendants a
13 written demand for the payment of the penalties. However,
14 penalties shall accrue as provided in the preceding Paragraph
15 regardless of whether EPA has notified the Defendants of a
16 violation.

17 81. All penalties owed to the United States and the State
18 under this section shall be due and payable within 30 days of the
19 Defendants' receipt from EPA of a demand for payment of the
20 penalties, unless Settling Defendants invoke the Dispute
21 Resolution procedures under Section XX (Dispute Resolution). All
22 payments under this Section shall be paid by certified check made
23 payable to "EPA Hazardous Substances Superfund," and referencing
24 "Hassayampa Landfill Superfund Site, SSID #9TB8" and DOJ Case
25 Number _____, and shall be mailed to:

26 U.S. Environmental Protection Agency, Region IX
27 ATTENTION: Superfund Accounting
28 P. O. Box 360863M
Pittsburgh, PA 15251

1 Copies of check(s) paid pursuant to this Section, and any
2 accompanying transmittal letter(s), shall be sent to the United
3 States as provided in Section XXVII (Notices and Submissions).

4 82. The payment of penalties shall not alter in any way
5 Settling Defendants' obligation to complete the performance of
6 the Work required under this Consent Decree.

7 83. Penalties shall continue to accrue as provided in
8 Paragraph 79 during any dispute resolution period, but need not
9 be paid until the following:

10 a. If the dispute is resolved by agreement or by a
11 decision of EPA that is not appealed to this Court, accrued
12 penalties determined to be owing shall be paid to EPA and the
13 State within 15 days of the agreement or the receipt of EPA's
14 decision or order;

15 b. If the dispute is appealed to this Court and the
16 United States prevails in whole or in part, Settling Defendants
17 shall pay all accrued penalties determined by the Court to be
18 owed to EPA and the State within 60 days of receipt of the
19 Court's decision or order, except as provided in Subparagraph c
20 below;

21 c. If the District Court's decision is appealed by
22 any Party, Settling Defendants shall pay all accrued penalties
23 determined by the District Court to be owing to the United States
24 or the State into an interest-bearing escrow account within 60
25 days of receipt of the Court's decision or order. Penalties
26 shall be paid into this account as they continue to accrue, at
27 least every 60 days. Within 15 days of receipt of the final
28 appellate court decision, the escrow agent shall pay the balance

1 of the account to EPA and the State or to Settling Defendants to
2 the extent that they prevail.

3 84. a. If Defendants fail to pay stipulated penalties
4 when due, the United States or the State may institute
5 proceedings to collect the penalties, as well as interest.
6 Defendants shall pay interest on the unpaid balance, which shall
7 begin to accrue on the date of demand made pursuant to Paragraph
8 81 at the rate established pursuant to Section 107(a) of CERCLA,
9 42 U.S.C. § 9607.

10 b. Nothing in this Consent Decree shall be construed
11 as prohibiting, altering, or in any way limiting the ability of
12 the United States or the State to seek any other remedies or
13 sanctions available by virtue of Defendants' violation of this
14 Decree or of the statutes and regulations upon which it is based,
15 including, but not limited to, penalties pursuant to Section
16 122(1) of CERCLA.

17 85. No payments made under this Section shall be tax
18 deductible for Federal or State tax purposes.

19 XXII. COVENANTS NOT TO SUE BY PLAINTIFFS

20 86. Settling Defendants: In consideration of the actions
21 that will be performed and the payments that will be made by the
22 Settling Defendants under the terms of the Consent Decree, and
23 except as specifically provided in Paragraphs 88, 89 and 91 of
24 this Section, the United States covenants not to sue or to take
25 administrative action against Settling Defendants pursuant to
26 Sections 106 and 107(a) of CERCLA relating to the Site. Except
27 with respect to future liability, these covenants not to sue
28 shall take effect upon the receipt by EPA of the payments

1 required by Paragraph 56 of Section XVII (Reimbursement and
2 Payment of Response Costs). With respect to future liability,
3 these covenants not to sue shall take effect upon Certification
4 of Completion of Remedial Action by EPA pursuant to Paragraph
5 53.b of Section XV (Certification of Completion). These
6 covenants not to sue are conditioned upon the complete and
7 satisfactory performance by Settling Defendants of their
8 obligations under this Consent Decree. These covenants not to
9 sue extend only to the Settling Defendants and do not extend to
10 any other person.

11 87. De Minimis Settling Defendants: In consideration of
12 the payments that will be made by the De Minimis Settling
13 Defendants pursuant to Section XVII (Reimbursement and Payment of
14 Response Costs) and Appendix F, and except as specifically
15 provided in Paragraphs 88, 89, and 92 of this Section, the United
16 States covenants not to sue or to take administrative action
17 against De Minimis Settling Defendants pursuant to Sections 106
18 and 107(a) of CERCLA relating to the Site. These covenants not
19 to sue shall take effect upon the receipt by EPA of the payments
20 required by Section XVII (Reimbursement and Payment of Response
21 Costs). These covenants not to sue are conditioned upon the
22 complete satisfaction by the De Minimis Settling Defendants of
23 their payment obligations under this Consent Decree. These
24 covenants not to sue extend only to the De Minimis Settling
25 Defendants and do not extend to any other person.

26 88. United States' Pre-certification reservations.
27 Notwithstanding any other provision of this Consent Decree, the
28 United States reserves, and this Consent Decree is without

1 prejudice to, the right to institute proceedings in this action
2 or in a new action, or to issue an administrative order seeking
3 to compel the Settling Defendants and De Minimis Settling
4 Defendants (1) to perform further response actions relating to
5 the Site or (2) to reimburse the United States for additional
6 costs of response if, prior to certification of completion of the
7 Remedial Action:

8 (i) conditions at the Site, previously unknown to EPA,
9 are discovered, or

10 (ii) information, previously unknown to EPA, is
11 received, in whole or in part,

12 and these previously unknown conditions or information together
13 with any other relevant information indicates that the Remedial
14 Action is not protective of human health or the environment.

15 89. United States' Post-certification reservations.

16 Notwithstanding any other provision of this Consent Decree, the
17 United States reserves, and this Consent Decree is without
18 prejudice to, the right to institute proceedings in this action
19 or in a new action, or to issue an administrative order seeking
20 to compel the Settling Defendants and De Minimis Settling
21 Defendants (1) to perform further response actions relating to
22 the Site or (2) to reimburse the United States for additional
23 costs of response if, subsequent to certification of completion
24 of the Remedial Action:

25 (i) conditions at the Site, previously unknown to
26 EPA, are discovered, or

27 (ii) information, previously unknown to EPA, is
28 received, in whole or in part,

1 and these previously unknown conditions or this information
2 together with other relevant information indicate that the
3 Remedial Action is not protective of human health or the
4 environment.

5 90. For purposes of Paragraph 88, the information and the
6 conditions known to EPA shall include only that information and
7 those conditions set forth in the Record of Decision for the Site
8 and the administrative record supporting the Record of Decision.
9 For purposes of Paragraph 89, the information previously received
10 by and the conditions known to EPA shall include only that
11 information and those conditions set forth in the Record of
12 Decision, the administrative record supporting the Record of
13 Decision, and any information received by EPA pursuant to the
14 requirements of this Consent Decree prior to Certification of
15 Completion of the Remedial Action.

16 91. General reservations of rights as to Settling
17 Defendants. The covenants not to sue set forth above do not
18 pertain to any matters other than those expressly specified in
19 Paragraphs 86 and 87. The United States and the State reserve,
20 and this Consent Decree is without prejudice to, all rights
21 against Settling Defendants with respect to all other matters,
22 including but not limited to, the following:

23 (1) claims based on a failure by Settling Defendants
24 to meet a requirement of this Consent Decree;

25 (2) liability arising from the past, present, or
26 future disposal, release, or threat of release of Waste
27 Materials outside of the Site;

28 (3) liability for damages for injury to, destruction

1 of, or loss of natural resources;

2 (4) liability for response costs that have been or may
3 be incurred by [insert the name of all federal agencies
4 which are trustees for natural resources and which have, or
5 may in the future, spend funds relating to the Site];

6 (5) criminal liability;

7 (6) liability for violations of federal or state law
8 which occur during or after implementation of the Remedial
9 Action; and

10 (7) previously incurred costs of response above the
11 amounts reimbursed pursuant to Paragraph 56;

12 (8) liability for costs that the United States will
13 incur related to the Site but are not within the definition
14 of Future Response Costs.

15 92. General reservations of rights as to De Minimis

16 Settling Defendants. The covenants not to sue set forth above do
17 not pertain to any matters other than those expressly specified
18 in Paragraphs 86 and 87. The United States and the State
19 reserve, and this Consent Decree is without prejudice to, all
20 rights against the De Minimis Settling Defendants with respect to
21 all other matters, including but not limited to, the following:

22 a. Claims based on a failure by De Minimis Settling
23 Defendants to meet a requirement of this Consent Decree;

24 b. Liability arising from the past, present, or
25 future disposal, release, or threat of release of Waste Materials
26 outside of the Site;

27 c. Liability for damages for injury to, destruction
28 of, or loss to natural resources;

1 d. Liability for response costs that have been or may
2 be incurred by [insert the name of all federal agencies which are
3 trustees for natural resources and which have, or may in the
4 future, spend funds relating to the Site];

5 e. Criminal liability.

6 93. In the event EPA determines that Settling Defendants
7 have failed to implement any provisions of the Work in an
8 adequate or timely manner, EPA may perform any and all portions
9 of the Work as EPA determines necessary. Settling Defendants may
10 invoke the procedures set forth in Section XX (Dispute
11 Resolution) to dispute EPA's determination that the Settling
12 Defendants failed to implement a provision of the Work in an
13 adequate or timely manner as arbitrary and capricious or
14 otherwise not in accordance with law. Such dispute shall be
15 resolved on the administrative record. Costs incurred by the
16 United States in performing the Work pursuant to this Paragraph
17 shall be considered Future Response Costs that Settling
18 Defendants shall pay pursuant to Section XVII (Reimbursement and
19 Payment of Response Costs).

20 94. Nothing in this Consent Decree will constitute a
21 covenant not to sue or otherwise will limit the ability of the
22 United States to seek or obtain further relief from the De
23 Minimis Settling Defendants, and the covenant not to sue set
24 forth above in Paragraph 87 and the contribution protection
25 provided in Paragraph 99 below will become null and void as to
26 any individual De Minimis Settling Defendant, if information not
27 currently known to the United States is discovered which
28 indicates that such De Minimis Settling Defendant contributed any

1 hazardous substance to the Site in such greater amounts or of
2 such greater toxic or other hazardous effects that such De
3 Minimis Settling Defendant no longer qualifies as a De Minimis
4 party with respect to the Site.

5 95. Each De Minimis Settling Defendant certifies that, to
6 the best of its knowledge and belief, it has provided to EPA all
7 information currently in its possession, and all information in
8 the possession of its officers, directors, employees, contractors
9 or agents, which relates in any way to the generation, treatment,
10 transportation or disposal of hazardous substances at or in
11 connection with the Site. If this certification is subsequently
12 determined to be false, the De Minimis Settling Defendant shall
13 forfeit all payments made pursuant to Section XVII (Reimbursement
14 and Payment of Response Costs) of this Consent Decree. Such
15 forfeiture shall not be calculated into any new settlement and
16 shall not constitute liquidated damages, nor shall it in any way
17 foreclose EPA's right to pursue any other causes of action
18 arising from De Minimis Settling Defendant's false certification.

19 96. Notwithstanding any other provision of this Consent
20 Decree, the United States and the State retain all authority and
21 reserve all rights to take any and all response actions
22 authorized by law.

23 [Insert the State's Covenant not to Sue the Settling Defendants
24 and reservation of rights.]

25 XXIII. COVENANTS BY DEFENDANTS

26 97. Defendants hereby covenant not to sue and agree not to
27 assert any claims or causes of action against the United States
28 or the State with respect to the Site or this Consent Decree,

1 including, but not limited to, any direct or indirect claim for
2 reimbursement from the Hazardous Substance Superfund (established
3 pursuant to the Internal Revenue Code, 26 U.S.C. § 9507) through
4 CERCLA Sections 106(b)(2), 111, 112, 113 or any other provision
5 of law, any claim against the United States, including any
6 department, agency or instrumentality of the United States under
7 CERCLA Sections 107 or 113 related to the Site, or any claims
8 arising out of response activities at the Site. However, the
9 Defendants reserve, and this Consent Decree is without prejudice
10 to, actions against the United States based on negligent actions
11 taken directly by the United States (not including oversight or
12 approval of the Settling Defendants' plans or activities) that
13 are brought pursuant to any statute other than CERCLA and for
14 which the waiver of sovereign immunity is found in a statute
15 other than CERCLA. Nothing in this Consent Decree shall be
16 deemed to constitute preauthorization of a claim within the
17 meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R.
18 § 300.700(d).

19 XXIV. EFFECT OF SETTLEMENT; CONTRIBUTION PROTECTION

20 98. Nothing in this Consent Decree shall be construed to
21 create any rights in, or grant any cause of action to, any person
22 not a party to this Consent Decree. The preceding sentence shall
23 not be construed to waive or nullify any rights that any person
24 not a signatory to this decree may have under applicable law.
25 Each of the Parties expressly reserves any and all rights
26 (including, but not limited to, any right to contribution),
27 defenses, claims, demands, and causes of action which each party
28 may have with respect to any matter, transaction, or occurrence

1 relating in any way to the Site against any person not a party
2 hereto.

3 99. With regard to claims for contribution against
4 Defendants for matters addressed in this Consent Decree, the
5 Parties hereto agree that the Defendants are entitled to such
6 protection from contribution actions or claims as is provided by
7 CERCLA Section 113(f)(2), 42 U.S.C. § 9613(f)(2).

8 100. The Defendants agree that with respect to any suit or
9 claim for contribution brought by them for matters related to
10 this Consent Decree they will notify the United States and the
11 State in writing no later than 60 days prior to the initiation of
12 such suit or claim.

13 101. The Defendants also agree that with respect to any suit
14 or claim for contribution brought against them for matters
15 related to this Consent Decree they will notify in writing the
16 United States and the State within 10 days of service of the
17 complaint on them. In addition, Defendants shall notify the
18 United States and the State within 10 days of service or receipt
19 of any Motion for Summary Judgment and within 10 days of receipt
20 of any order from a court setting a case for trial.

21 102. In any subsequent administrative or judicial proceeding
22 initiated by the United States or the State for injunctive
23 relief, recovery of response costs, or other appropriate relief
24 relating to the Site, Defendants shall not assert, and may not
25 maintain, any defense or claim based upon the principles of
26 waiver, res judicata, collateral estoppel, issue preclusion,
27 claim-splitting, or other defenses based upon any contention that
28 the claims raised by the United States or the State in the

1 subsequent proceeding were or should have been brought in the
2 instant case; provided, however, that nothing in this Paragraph
3 affects the enforceability of the covenants not to sue set forth
4 in Section XXII (Covenants Not to Sue by Plaintiffs).

5 XXV. ACCESS TO INFORMATION

6 103. Settling Defendants shall provide to EPA and the State,
7 upon request, copies of all documents and information within
8 their possession or control or that of their contractors or
9 agents relating to activities at the Site or to the
10 implementation of this Consent Decree, including, but not limited
11 to, sampling, analysis, chain of custody records, manifests,
12 trucking logs, receipts, reports, sample traffic routing,
13 correspondence, or other documents or information related to the
14 Work. Settling Defendants shall also make available to EPA and
15 the State, for purposes of investigation, information gathering,
16 or testimony, their employees, agents, or representatives with
17 knowledge of relevant facts concerning the performance of the
18 Work.

19 104. a. Settling Defendants may assert business
20 confidentiality claims covering part or all of the documents or
21 information submitted to Plaintiffs under this Consent Decree to
22 the extent permitted by and in accordance with Section 104(e)(7)
23 of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b).
24 Documents or information determined to be confidential by EPA
25 will be afforded the protection specified in 40 C.F.R. Part 2,
26 Subpart B. If no claim of confidentiality accompanies documents
27 or information when they are submitted to EPA and the State, or
28 if EPA has notified Settling Defendants that the documents or

1 information are not confidential under the standards of Section
2 104(e)(7) of CERCLA, the public may be given access to such
3 documents or information without further notice to Settling
4 Defendants.

5 b. The Settling Defendants may assert that certain
6 documents, records and other information are privileged under the
7 attorney-client privilege or any other privilege recognized by
8 federal law. If the Settling Defendants assert such a privilege
9 in lieu of providing documents, they shall provide the Plaintiffs
10 with the following: (1) the title of the document, record, or
11 information; (2) the date of the document, record, or
12 information; (3) the name and title of the author of the
13 document, record, or information; (4) the name and title of each
14 addressee and recipient; (5) a description of the contents of the
15 document, record, or information; and (6) the privilege asserted
16 by Settling Defendants. However, no documents, reports or other
17 information created or generated pursuant to the requirements of
18 the Consent Decree shall be withheld on the grounds that they are
19 privileged.

20 105. No claim of confidentiality shall be made with respect
21 to any data, including, but not limited to, all sampling,
22 analytical, monitoring, hydrogeologic, scientific, chemical, or
23 engineering data, or any other documents or information
24 evidencing conditions at or around the Site.

25 XXVI. RETENTION OF RECORDS

26 106. Until 10 years after the Settling Defendants' receipt
27 of EPA's notification pursuant to Paragraph 53.b of Section XV
28 (Certification of Completion), each Settling Defendant shall

1 preserve and retain all records and documents now in its
2 possession or control or which come into its possession or
3 control that relate in any manner to the performance of the Work
4 or liability of any person for response actions conducted and to
5 be conducted at the Site, regardless of any corporate retention
6 policy to the contrary. Until 10 years after the Settling
7 Defendants' receipt of EPA's notification pursuant to Paragraph
8 53.b of Section XV (Certification of Completion), Settling
9 Defendants shall also instruct their contractors and agents to
10 preserve all documents, records, and information of whatever
11 kind, nature or description relating to the performance of the
12 Work.

13 107. At the conclusion of this document retention period,
14 Settling Defendants shall notify the United States and the State
15 at least 90 days prior to the destruction of any such records or
16 documents, and, upon request by the United States or the State,
17 Settling Defendants shall deliver any such records or documents
18 to EPA or the State. The Settling Defendants may assert that
19 certain documents, records and other information are privileged
20 under the attorney-client privilege or any other privilege
21 recognized by federal law. If the Settling Defendants assert
22 such a privilege, they shall provide the Plaintiffs with the
23 following: (1) the title of the document, record, or
24 information; (2) the date of the document, record, or
25 information; (3) the name and title of the author of the
26 document, record, or information; (4) the name and title of each
27 addressee and recipient; (5) a description of the subject of the
28 document, record, or information; and (6) the privilege asserted

1 by Settling Defendants. However, no documents, reports or other
2 information created or generated pursuant to the requirements of
3 the Consent Decree shall be withheld on the grounds that they are
4 privileged.

5 108. Each Defendant hereby certifies, individually, that it
6 has not altered, mutilated, discarded, destroyed or otherwise
7 disposed of any records, documents or other information relating
8 to its potential liability regarding the Site since notification
9 of potential liability by the United States or the State or the
10 filing of suit against it regarding the Site and that it has
11 fully complied with any and all EPA requests for information
12 pursuant to Section 104(e) and 122(e) of CERCLA and Section 3007
13 of RCRA.

14 XXVII. NOTICES AND SUBMISSIONS

15 109. Whenever, under the terms of this Consent Decree,
16 written notice is required to be given or a report or other
17 document is required to be sent by one party to another, it shall
18 be directed to the individuals at the addresses specified below,
19 unless those individuals or their successors give notice of a
20 change to the other parties in writing. All notices and
21 submissions shall be considered effective upon receipt, unless
22 otherwise provided. Written notice as specified herein shall
23 constitute complete satisfaction of any written notice
24 requirement of the Consent Decree with respect to the United
25 States, EPA, the State, and the Settling Defendants,
26 respectively.

1 As to the United States:

2 Chief, Environmental Enforcement Section
3 Environment and Natural Resources Division
4 U.S. Department of Justice
5 P.O. Box 7611
6 Ben Franklin Station
7 Washington, D.C. 20044
8 Re: DJ # _____

9 and

10 Jeffrey Zelikson
11 Director, Hazardous Waste Management Division
12 U.S. Environmental Protection Agency, Region IX
13 75 Hawthorne Street
14 San Francisco, CA 94105

15 As to EPA:

16 Tom Dunkelman, H-7-1
17 Remedial Project Manager
18 U.S. Environmental Protection Agency, Region IX
19 75 Hawthorne Street
20 San Francisco, CA 94105

21 Robert Ogilvie, RC-3-3
22 Assistant Regional Counsel
23 U.S. Environmental Protection Agency, Region IX
24 75 Hawthorne Street
25 San Francisco, CA 94105

26 As to the State:

27 [Name]
28 State Project Coordinator
[Address]

29 As to the Settling Defendants:

30 [Name]
31 Settling Defendants' Project Coordinator
32 [Address]

33 XXVIII. EFFECTIVE DATE

34 110. The effective date of this Consent Decree shall be the
35 date upon which this Consent Decree is entered by the Court,
36 except as otherwise provided herein.

37 XXIX. RETENTION OF JURISDICTION

38 111. This Court retains jurisdiction over both the subject

1 matter of this Consent Decree and the Settling Defendants for the
2 duration of the performance of the terms and provisions of this
3 Consent Decree for the purpose of enabling any of the Parties to
4 apply to the Court at any time for such further order, direction,
5 and relief as may be necessary or appropriate for the
6 construction or modification of this Consent Decree, or to
7 effectuate or enforce compliance with its terms, or to resolve
8 disputes in accordance with Section XX (Dispute Resolution)
9 hereof.

10 XXX. APPENDICES

11 112. The following appendices are attached to and
12 incorporated into this Consent Decree:

13 "Appendix A" is the ROD.

14 "Appendix B" is the SOW.

15 "Appendix C" is the description and/or map of the Site.

16 "Appendix D" is the complete list of the Non-Owner Settling
17 Defendants.

18 "Appendix E" is the complete list of the Owner Settling
19 Defendants.

20 "Appendix F" is the complete list of the De Minimis Settling
21 Defendants, their volumetric rankings and their required payments
22 under this Consent Decree.

23 "Appendix G" is a draft Hassayampa Site Trust Agreement.

24 XXXI. COMMUNITY RELATIONS

25 113. Settling Defendants shall propose to EPA and the State
26 their participation in the community relations plan to be
27 developed by EPA. EPA will determine the appropriate role for
28 the Settling Defendants under the Plan. Settling Defendants

1 shall also cooperate with EPA and the State in providing
2 information regarding the Work to the public. As requested by
3 EPA or the State, Settling Defendants shall participate in the
4 preparation of such information for dissemination to the public
5 and in public meetings which may be held or sponsored by EPA or
6 the State to explain activities at or relating to the Site.

7 XXXII. MODIFICATION

8 114. Schedules specified in this Consent Decree for
9 completion of the Work may be modified by agreement of EPA and
10 the Settling Defendants. All such modifications shall be made in
11 writing.

12 115. No material modifications shall be made to the SOW
13 without written notification to and written approval of the
14 United States, Settling Defendants, and the Court. Prior to
15 providing its approval to any modification, the United States
16 will provide the State with a reasonable opportunity to review
17 and comment on the proposed modification. Modifications to the
18 SOW that do not materially alter that document may be made by
19 written agreement between EPA, after providing the State with a
20 reasonable opportunity to review and comment on the proposed
21 modification, and the Settling Defendants.

22 116. Nothing in this Decree shall be deemed to alter the
23 Court's power to enforce, supervise or approve modifications to
24 this Consent Decree.

25 117. The United States shall notify the Court once payment
26 of the sums set forth in Section XVII (Reimbursement and Payment
27 of Response Costs) are made by the De Minimis Settling
28 Defendants. The Court shall terminate this Consent Decree as to

1 those De Minimis Settling Defendants meeting their obligations
2 under this Consent Decree. Such termination and dismissal shall
3 not affect the operation of and the obligations under Sections
4 XXII (Covenants Not to Sue by Plaintiffs), XXIII (Covenants by
5 Defendants), and Section XXIV (Effect of Settlement; Contribution
6 Protection).

7 XXXIII. LODGING AND OPPORTUNITY FOR PUBLIC COMMENT

8 118. This Consent Decree shall be lodged with the Court for
9 a period of not less than thirty (30) days for public notice and
10 comment in accordance with Sections 122(d)(2) and 122(i) of
11 CERCLA, 42 U.S.C. § 9622(d)(2) and 9622(i), and 28 C.F.R. § 50.7.
12 The United States reserves the right to withdraw or withhold its
13 consent if the comments regarding the Consent Decree disclose
14 facts or considerations which indicate that the Consent Decree is
15 inappropriate, improper, or inadequate. Defendants consent to
16 the entry of this Consent Decree without further notice.

17 119. If for any reason the Court should decline to approve
18 this Consent Decree in the form presented, this agreement is
19 voidable at the sole discretion of any party and the terms of the
20 agreement may not be used as evidence in any litigation between
21 the Parties.

22 XXXIV. SIGNATORIES/SERVICE

23 120. Each undersigned representative of a Defendant to this
24 Consent Decree, the [title] for the State, and the Assistant
25 Attorney General for Environment and Natural Resources of the
26 Department of Justice certifies that he or she is fully
27 authorized to enter into the terms and conditions of this Consent
28 Decree and to execute and legally bind such party to this

1 document.

2 121. Each Defendant hereby agrees not to oppose entry of
3 this Consent Decree by this Court or to challenge any provision
4 of this Consent Decree unless the United States has notified the
5 Defendants in writing that it no longer supports entry of the
6 Consent Decree.

7 122. Each Defendant shall identify, on the attached
8 signature page, the name, address and telephone number of an
9 agent who is authorized to accept service of process by mail on
10 behalf of that party with respect to all matters arising under or
11 relating to this Consent Decree. Defendants hereby agree to
12 accept service in that manner and to waive the formal service
13 requirements set forth in Rule 4 of the Federal Rules of Civil
14 Procedure and any applicable local rules of this Court,
15 including, but not limited to, service of a summons.

16 SO ORDERED THIS _____ DAY OF _____, 19__.

17
18 _____
19 United States District Judge
20
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26
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28

1 THE UNDERSIGNED PARTIES enter into this Consent Decree in the
2 matter of United States v. _____, relating
3 to the Hassayampa Landfill Superfund Site.

4
5 FOR THE UNITED STATES OF AMERICA

6
7 Date: _____

8 Vicki O'Meara
9 Acting Assistant Attorney General
10 Environment and Natural Resources
11 Division
12 U.S. Department of Justice
13 Washington, D.C. 20530

14
15 [Name]
16 Environmental Enforcement Section
17 Environment and Natural Resources
18 Division
19 U.S. Department of Justice
20 Washington, D.C. 20530

21
22 [Name]
23 Assistant United States Attorney
24 District of _____
25 U.S. Department of Justice
26 [Address]

27
28 Herbert H. Tate, Jr.
Assistant Administrator for Enforcement
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

[Name]
Office of Enforcement
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

1 Daniel W. McGovern
2 Regional Administrator, Region IX
3 U.S. Environmental Protection Agency
4 75 Hawthorne Street
5 San Francisco, CA 94105
6

7 Harrison L. Karr
8 Assistant Regional Counsel, Region IX
9 U.S. Environmental Protection Agency
10 75 Hawthorne Street
11 San Francisco, CA 94105
12

13 Robert Ogilvie
14 Assistant Regional Counsel, Region IX
15 U.S. Environmental Protection Agency
16 75 Hawthorne Street
17 San Francisco, CA 94105
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1 United States v. _____
2 Consent Decree Signature Page

3 FOR THE STATE OF ARIZONA

4
5 Date: _____

6 [Name]
7 [Title]
8 [Address]
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1 THE UNDERSIGNED PARTY enters into this Consent Decree in the
2 matter of United States v. _____, relating
3 to the Hassayampa Landfill Superfund Site.
4

5 FOR _____ COMPANY, INC.
6

7 Date: _____
8 [Name -- Please Type]
9 [Title -- Please Type]
10 [Address -- Please Type]

11 Agent Authorized to Accept Service on Behalf of Above-signed
12 Party:

13 Name: _____ [Please Type]
14 Title: _____
15 Address: _____
16 Tel. Number: _____
17
18
19
20
21
22
23
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25
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27
28

APPENDICES

"Appendix A" is the ROD.

"Appendix B" is the SOW.

"Appendix C" is the description and/or map of the Site.

"Appendix D" is the complete list of the Non-Owner Settling Defendants.

"Appendix E" is the complete list of the Owner Settling Defendants.

"Appendix F" is the complete list of the De Minimis Settling Defendants, their volumetric rankings and their required payments under this Consent Decree.

"Appendix G" is a draft Hassayampa Site Trust Agreement.

[Appendices C through F are not included with the proposed consent decree sent with EPA's special notice letter. Appendices D, E, and F will list the Defendants which sign the consent decree at the conclusion of negotiations. Appendix G will describe a trust account to which De Minimis Settling Defendants will make settlement payments.]

0222-00785

**RECORD OF DECISION
HASSAYAMPA LANDFILL
SUPERFUND SITE**

August 1992

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I. DECLARATION

A. SITE NAME AND LOCATION

This Record of Decision (ROD) is written for the Hassayampa Landfill Superfund Site (the Hassayampa Landfill Site, the Site), which is located in Maricopa County, Arizona, approximately 40 miles west of Phoenix, Arizona. For purposes of this ROD, the Site shall be defined as the 10-acre area of the 47-acre municipal landfill where hazardous wastes are known to have been disposed, as well as any areas where site-related contaminants have come to be located.

B. STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for contaminated soil and groundwater at the Hassayampa Landfill Site, chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Contingency Plan (NCP). This decision document is based on the Administrative Record for the Site, the index of which is attached as Appendix C.

C. ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

D. DESCRIPTION OF THE SELECTED REMEDY


The selected remedy for the Hassayampa Landfill Site includes remediation of groundwater and vadose zone (including soil and soil vapor above the water table) contamination. The groundwater component of the remedy includes extraction of contaminated groundwater, treatment of the water using air stripping technology (vapor phase carbon adsorption will be performed as necessary to meet Federal, State, and County regulations pertaining to air emissions), reinjection of the treated water, and continued groundwater monitoring to measure the effectiveness of the remedy. Federal Maximum Contaminant Levels (MCLs) have been chosen as groundwater cleanup standards. For those contaminants detected on Site for which no MCLs exist, Health-Based Guidance Levels proposed by the State of Arizona have been selected as groundwater cleanup standards. The groundwater cleanup standards shall be met at all points within the contaminated aquifer.

The vadose zone component of the remedy includes capping the 10-acre Hazardous Waste Area of the landfill using a cap that complies with the substantive capping and maintenance requirements for Resource Conservation and Recovery Act (RCRA) Interim Status facilities as described in 40 CFR Parts 265.310 and 265.117, and as described in the "EPA Technical Guidance Document: Final Covers on Hazardous Waste Landfills and Surface Impoundments." In addition, the vadose zone component of the selected remedy includes performing soil vapor extraction at all locations at the Site where soil vapor levels exceed cleanup standards, treating the soil vapor using vapor phase carbon adsorption or catalytic oxidation technology (to be determined during remedial design), and implementing access and deed restrictions. The soil vapor cleanup standards shall be levels that are protective of groundwater quality (meaning that the migration of contaminants from the vadose zone to groundwater will not result in groundwater contamination that exceeds the groundwater cleanup standards). The soil vapor cleanup standards will be determined through site-specific analytical modeling conducted during the remedial design stage. Additional investigation will also be performed during the remedial design stage in order to determine the extent of groundwater and soil vapor contamination.

E. STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy uses permanent solutions and alternative treatment technologies to the maximum extent practicable, and satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element.

Because the selected remedial action allows contaminated soil to remain onsite in excess of health-based levels, a review will be conducted within five years of commencement of remedial actions to ensure that the remedy continues to provide adequate protection of human health and the environment.


Daniel W. McGovern
Regional Administrator
U.S. EPA Region 9

8-6-92
Date

II. DECISION SUMMARY

A. SITE NAME, LOCATION AND DESCRIPTION

1. LOCATION

The Hassayampa Landfill Site is located in a rural desert area approximately 40 miles west of Phoenix, Arizona. The Site is approximately three-fourths of a mile west of the Hassayampa River, one and a half miles northwest of the town of Hassayampa, three miles north of the town of Arlington, and five miles east of the Palo Verde Nuclear Generating Station. Figure 1 depicts the location of the Hassayampa Landfill Site.

The Hassayampa Landfill occupies a fenced 47-acre area located on a 77-acre parcel owned by Maricopa County. The hazardous waste area (HWA) of the landfill occupies a 10-acre area within the northeast section of the landfill. For purposes of this ROD, the Site shall be defined as the 10-acre area of the landfill where hazardous wastes are known to have been disposed, as well as any areas where site-related contaminants have come to be located.

2. LAND USE

The non-hazardous portion of the Hassayampa Landfill is still operated as a municipal landfill. Maricopa County personnel have indicated that the expected life of the non-hazardous portion of the landfill at the current rate of use is an additional ten years. The HWA is fenced and is no longer being used for landfill purposes. Approximately one-sixth of the land surrounding the landfill is cultivated, while the remaining areas are desert. Most of the cultivated land is located east of the Hassayampa River and south of the Arlington Mesa. The immediate vicinity of the landfill is sparsely vegetated. Vegetation consists mainly of creosote bush and salt bush.

3. POPULATION

Presently, the nearest residents live approximately 1,000 meters south of the HWA. Communities located within a three mile radius of the landfill include Hassayampa and Arlington. The combined 1985 census population for these two communities was 1,100 people. A growth rate of one to two percent was used to calculate a current population of 1,120 people. According to the Maricopa County Human Resources Department, a population growth of 10 to 15 percent is expected to occur over the next 20 years within a five mile radius of the Site. Several workers are employed at the non-hazardous portion of the Hassayampa Landfill.

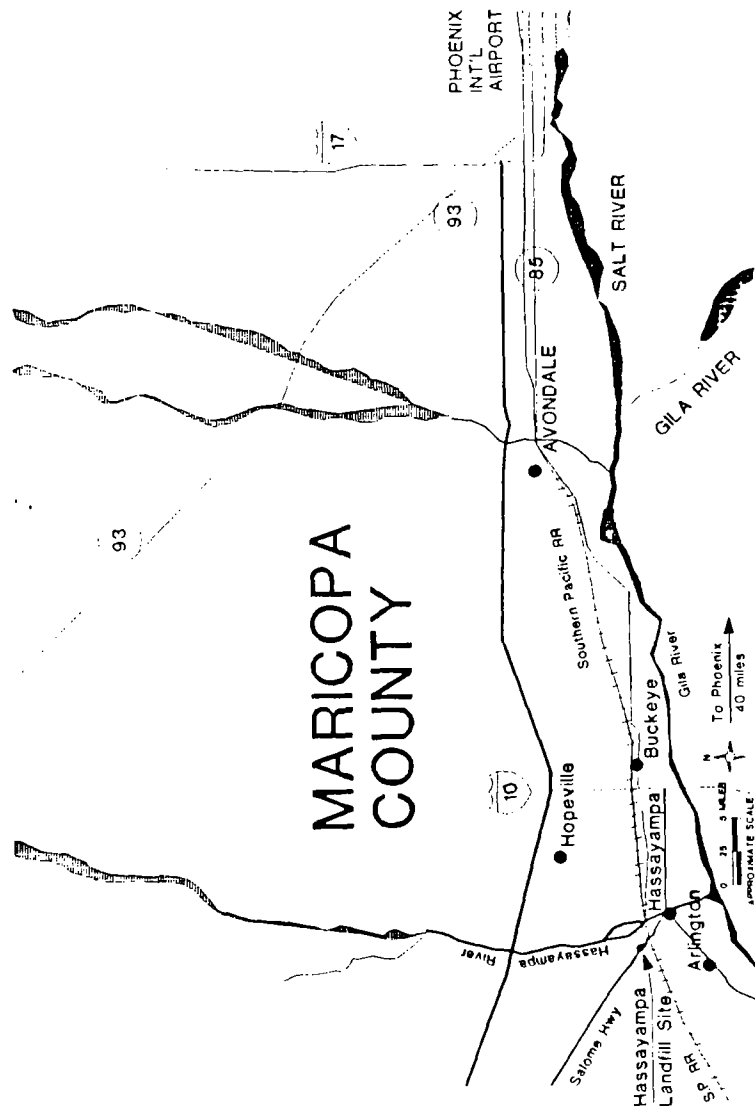


FIGURE 1

4. CLIMATE

The Site is characterized by a dry desert climate. The average precipitation at the Buckeye meteorological station (about nine miles to the east) was 7.08 inches per year, most of which occurred during a few days each year. Precipitation of 0.10 inches or more occurs on an average of 20 days per year. Records from the Buckeye station indicate the average daily maximum temperature is approximately 87° F, and the average daily minimum temperature is approximately 52° F. The average pan evaporation measured at the Salt River Valley station in Mesa (about 54 miles to the east) was about 106 inches per year.

5. TOPOGRAPHY

The Site is located on the broad southward-sloping alluvial plain of the Hassayampa River basin. The basin is bounded on the east by the White Tank Mountains, on the south by the Buckeye Hills, and on the west by the Palo Verde Hills. The surface of the alluvial plain occupied by the Site is generally flat; however, approximately one half mile south of the Site, the plain is broken by the Arlington Mesa. The HWA is currently overlain by a graded soil cover. The altitude of the land surface at the HWA is approximately 910 to 915 feet above mean sea level.

6. SURFACE WATER

The Hassayampa Landfill Site lies within the Hassayampa River drainage area, but outside of the 100-year floodplain of the river. The Site is located about three-quarters of a mile west of the Hassayampa River, which flows to the south. The Site is near a north-trending surface water drainage divide between the Hassayampa River and an unnamed wash to the west, which is a tributary of the Luke Wash. The Hassayampa River and the Luke Wash are ephemeral desert washes that are tributaries of the westward flowing Gila River. Presently the Gila River is perennial at its confluence with the Hassayampa River.

7. GROUNDWATER

Regional hydrogeologic units in the area of the Site include in order of increasing depth: Recent alluvial deposits, basin-fill deposits, and the bedrock complex. Groundwater levels in the vicinity of the Site generally lie below the base of the Recent alluvial deposits. However, where saturated, the Recent alluvial deposits may yield moderate quantities of groundwater to wells. The thickness of the basin-fill deposits appears to exceed 1,200 feet in the vicinity of the landfill. The basin-fill deposits comprise the principal source of groundwater to wells in the area of the Site, and are generally referred to as the regional aquifer. Within a three mile radius of the Site, 349 groundwater wells have been identified, 172 of which potentially service

individual residences. These wells yield groundwater from the regional basin-fill deposits aquifer. The reported depths range from 5 feet below land surface to 250 feet below land surface. The nearest downgradient domestic well is about 2,500 feet south of the Site.

The basin-fill deposits have been classified in order of increasing depth into the Upper, Middle, and Lower Alluvium units. The Upper Alluvium unit beneath the Site was the target of the hydrogeologic investigations conducted at the Site. For purposes of the Remedial Investigation (RI), the Upper Alluvium unit was subdivided in order of increasing depth into the upper alluvial deposits unit, basaltic lava-flow unit, Unit A, and Unit B (Figure 2).

The upper alluvial deposits unit consists of a coarse-grained part and a fine-grained part. The average depth to the base of the coarse-grained part is about 34 feet; while the average depth to the base of the fine-grained part is about 58 feet. The basaltic lava-flow unit consists of vesicular, basaltic rock and is part of the Arlington Mesa basalt flows. This unit appears to thin and dip towards the north. The presence of contaminated groundwater in Unit A indicates that the basaltic lava-flow unit is not an impermeable unit.

The part of the Upper Alluvium unit from the base of the basaltic lava-flow unit to the top of the Middle Alluvium unit is the uppermost water-bearing part of the regional aquifer, and has been subdivided into Units A and B. There is no confining unit separating Units A and B, and Units A and B are considered to be water-bearing zones within the same aquifer. Unit A comprises the uppermost fine-grained water-bearing unit, while Unit B is the uppermost coarse-grained water bearing unit. Unit B is underlain by a silty clay. This clay has tentatively been classified as the Palo Verde Clay, and appears to comprise the basal confining unit for Unit B.

The direction of groundwater flow in Units A and B is generally to the south, although local variations in the flow direction may occur. The average depth to the water table beneath the Site is 71 feet. Water level contours and potentiometric contours for Units A and B are presented in Figures 3 and 4.

D. SITE HISTORY AND ENFORCEMENT ACTIVITIES

1. HISTORICAL ACTIVITIES

The Hassayampa Landfill is presently owned by Maricopa County and is operated by the Maricopa County Landfill Department. Maricopa County had signed a 20-year lease on the 77-acre parcel from the U.S. Federal Aviation Agency, and after the lease expired in 1963 the parcel was transferred to Maricopa County by quitclaim deed.

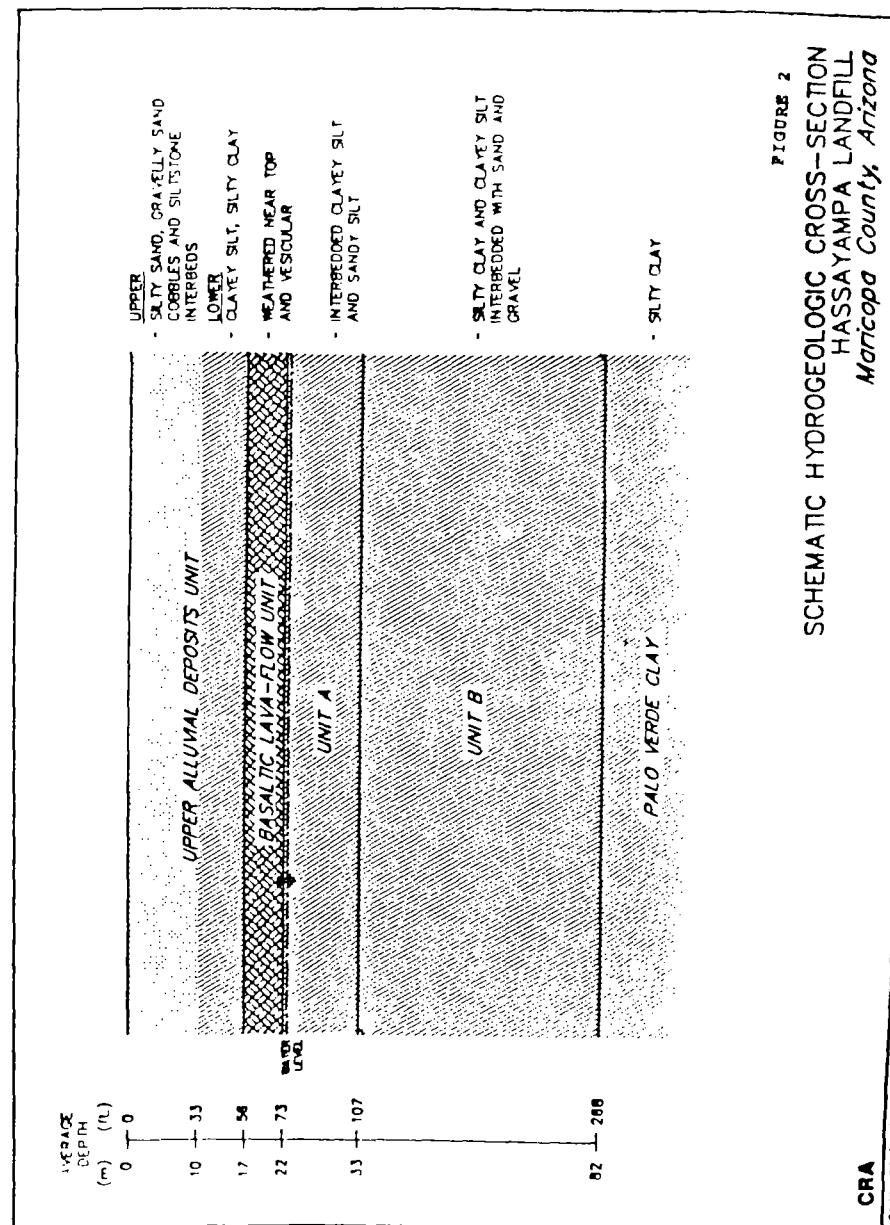
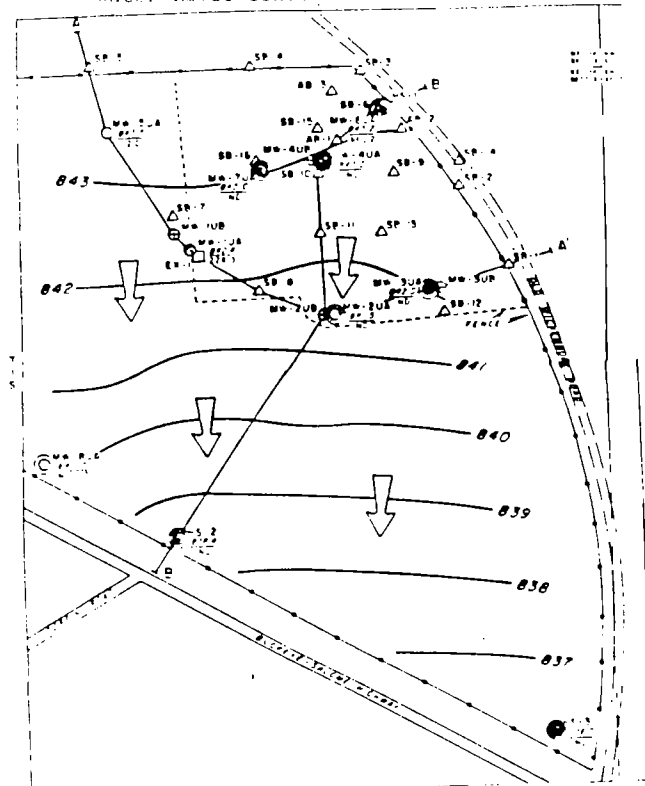


Figure 3

Water-Level Contours for Unit A



EXPLANATION

- MA-1UA UNIT A MONITOR WELL AND IDENTIFIER
- MA-2UA WATER LEVEL ALTITUDE JUNE 1980
- MA-3UA TOTAL CONCENTRATION IN MCM CHROMIUM PER LITER OF H₂O IN ORGANIC COMPOUNCES IN BRU-CHROMIUM SAMPLE DATA SET IN JUNE 1980. HIGHEST DETECTED SLASH SEPARATES DUPLICATE SAMPLES.
- MA-4UA UNIT B MONITOR WELL AND IDENTIFIER
- MA-5UA ABANDONED MONITOR WELL AND IDENTIFIER CONSTRUCTED BY ARIZONA DEPARTMENT OF HEALTH SERVICES ABANDONED JUNE 1989
- MA-6UA EXPLORATION BORING AND IDENTIFIER
- MA-7UA VERTICAL SO₂ BORING AND IDENTIFIER
- MA-8UA ANGLED SO₂ BORING AND IDENTIFIER

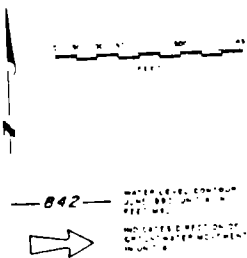
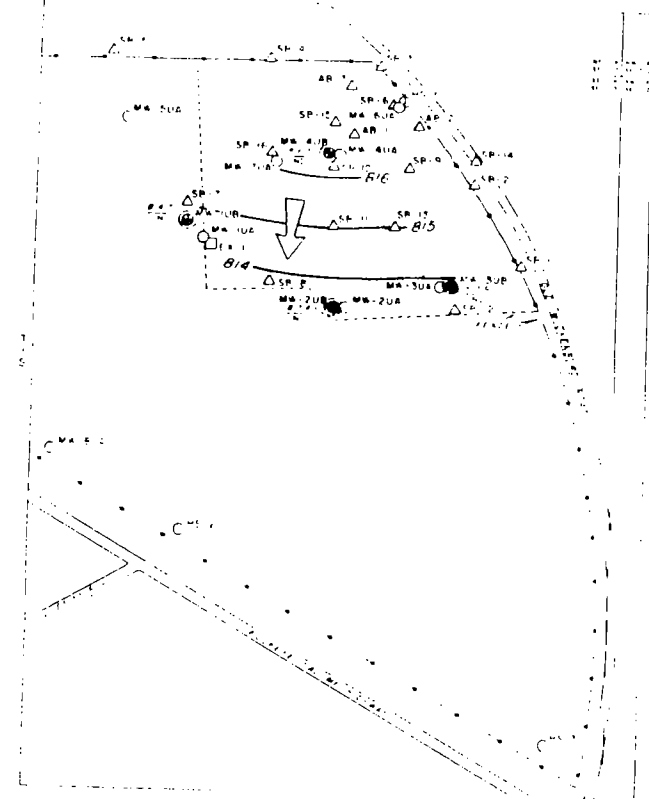


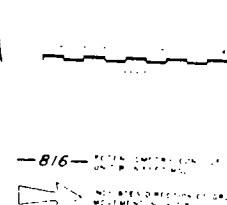
Figure 4

Potentiometric Contours for Unit B



EXPLANATION

- MA-1UB UNIT B MONITOR WELL AND IDENTIFIER
- MA-2UB WATER LEVEL ALTITUDE JUNE 1980
- MA-3UB TOTAL CONCENTRATION IN MCM CHROMIUM PER LITER OF H₂O IN ORGANIC COMPOUNCES IN BRU-CHROMIUM SAMPLE DATA SET IN JUNE 1980. HIGHEST DETECTED SLASH SEPARATES DUPLICATE SAMPLES.
- MA-4UB ABANDONED MONITOR WELL AND IDENTIFIER CONSTRUCTED BY ARIZONA DEPARTMENT OF HEALTH SERVICES ABANDONED JUNE 1989
- MA-5UB EXPLORATION BORING AND IDENTIFIER
- MA-6UB VERTICAL SO₂ BORING AND IDENTIFIER
- MA-7UB ANGLED SO₂ BORING AND IDENTIFIER



Disposal of municipal and domestic waste began at the Landfill in 1961 and has continued to the present. According to a 1977 report prepared for the Arizona Department of Health Services (ADHS), the types of waste disposed at the landfill were unrestricted but consisted chiefly of garbage, rubbish, tree trimmings, and other plant refuse. In that report, it was stated that the Hassayampa Landfill was not suitable for the disposal of hazardous waste. Based on this report, Maricopa County prohibited the disposal of hazardous waste at the landfill.

On February 15, 1979, ADHS prohibited disposal of industrial waste at the City of Phoenix's landfills. Because no alternate waste disposal sites were available in Arizona, ADHS characterized the situation as an "extreme emergency." Consequently, ADHS requested that Maricopa County accept hazardous waste at the Hassayampa Landfill for a 30-day period beginning on April 20, 1979. After the initial 30-day period, several time extensions for hazardous waste disposal at the landfill were granted. On October 28, 1980, the disposal of hazardous waste at the Hassayampa Landfill was prohibited.

During the 18-month period from April 20, 1979 to October 28, 1980, disposal of hazardous waste at the landfill was conducted under a manifest program operated by ADHS. An inventory performed by ADHS indicated that a wide range of hazardous wastes consisting of up to 3.28 million gallons of liquid waste and up to 4,150 tons of solid waste were approved by ADHS for disposal at the landfill. However, an inventory conducted by consultants for the potentially responsible parties (PRPs), indicated that the amount of hazardous waste approved by ADHS for disposal consisted of up to 3.44 million gallons of liquid waste and up to 3,710 tons of solid waste.

The hazardous waste area was composed of several unlined pits that were designated for disposal of hazardous or nonhazardous wastes. Pits 1, 2, 3 (including 3a, 3b, and 3c), 4 (including 4a, 4b, and 4c), and the Special Pits were designated for disposal of hazardous waste (Figure 5). The waste types varied greatly and included heavy metals, solvents, petroleum distillates, oil, pesticides, acids, and bases. Specific pits were designated to receive certain types of waste, but it is not clear that this practice was always followed. The designated waste types, the actual received waste types, and the quantities for each pit, as reported in the RI report, are presented in Table 1.

Pits A and B were designated for the disposal of non-hazardous waste. Although Pit A was intended for cesspool and septic tank wastes, other substances (whitish grey sludge, black oily liquid, and pesticide containers) were also disposed (Ecology and Environment, 1981). The contents of Pit B were not well defined. It should be noted that the wastes disposed in Pits A and B were

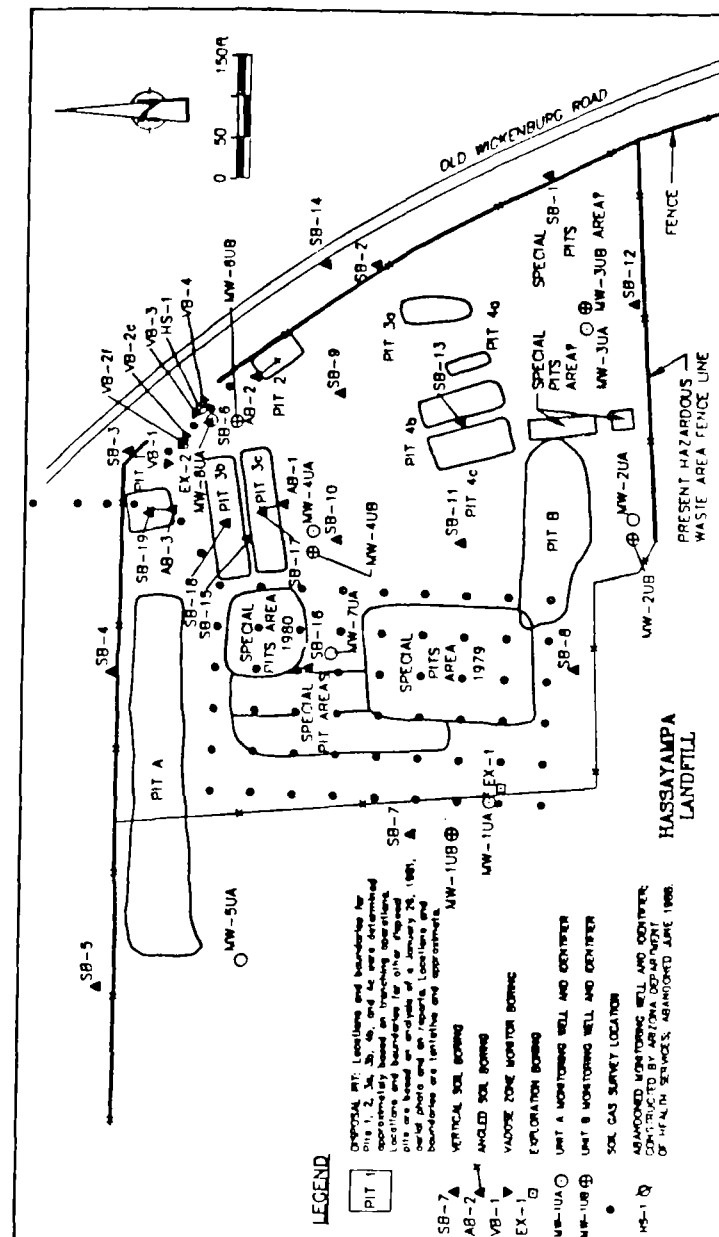


FIGURE 5
RI MONITORING LOCATIONS
HASSAYAMPA LANDFILL
Maricopa County, Arizona

REFERENCE:
INFORMATION FOR BASE MAP
FROM ERROL L. MONTGOMERY
AND ASSOCIATES INC.

CRA

2141(10)-MAY 4/92-REV.2 (P.4)

TABLE 1
SUMMARY OF WASTES APPROVED FOR DISPOSAL
HASSAYAMPA FEASIBILITY STUDY

Pit(s)	Waste Type Designated	Quantity Reported in the Liquid Waste Evaluation Report (CRA AND M&A, 1991)		Quantity Reported by Arizona Department of Health Services (1985)	
		Liquid Waste (gallons)	Solid Waste (tons)	Liquid Waste (gallons)	Solid Waste (tons)
Special Pit	Incompatible Hazardous Waste	174,183	2,123	134,578	305.64
Pit 1	Organics & Oils	373,755	5.0	360,805	0
Pit 2	Acids & Acid Sludges	110,930	0.1	125,597	0.1
Pits 3a, b and c	Alkaline & Metallic Sludges	1,368,991	7.3	1,362,636	24.5
Pits 4a, b and c	Pesticides & Alkaline Sludges	<u>1,427,467</u>	<u>1,600</u>	<u>1,295,022</u>	<u>3,816.46</u>
	Total	<u>3,435,326</u>	<u>3,735.4</u>	<u>3,278,639</u>	<u>4,149.7</u>

Notes

The waste amounts are determined from an analysis of ADHS approved waste manifests

The difference between these estimates is explained in the Liquid Waste Evaluation Report (M&A and CRA, 1991). These differences are attributed to the different solid waste volume reported by ADHS. This solid waste difference, if converted to liquid waste, would reduce the difference in liquid volumes to three percent.

not recorded under the manifest system.

2. SITE DISCOVERY

In 1981, under the Resource Conservation and Recovery Act (RCRA) Open Dump Inventory Program, ADHS installed three groundwater monitoring wells at the Hassayampa Landfill. Groundwater samples collected from one of these wells was found to be contaminated with volatile organic compounds (VOCs). Also in 1981, Ecology and Environment prepared a site inspection report for the U.S. Environmental Protection Agency (EPA). In 1984, ADHS conducted site inspections of the landfill. The Site was added to EPA National Priorities List in July 1987.

3. SITE INVESTIGATIONS

The major preliminary investigation reports prepared for the site are summarized below:

- Hydrogeologic Conditions and Waste Disposal at the Hassayampa, Casa Grande, and Somerton Landfills, Arizona (Schmidt and Scott, 1977);
- The Hassayampa Landfill Hazardous Waste Disposal Site: Disposal Analysis (April 20, 1979 - October 28, 1980) (ADHS, 1980);
- Site Inspection Report on Hassayampa Landfill, Hassayampa, Arizona (Ecology and Environment, 1981);
- Geotechnical Evaluation of the Influence of Hassayampa Landfill Hazardous Wastes on the PVNGS Conveyance Pipeline (Ertac Western, 1982);
- Open Dump Inventory of Hassayampa Landfill, Groundwater Criterion (ADHS, 1982);
- Hassayampa Landfill Site Inspection Report (ADHS, 1985);
- Results of Preliminary Hydrogeological Investigations, Hassayampa Landfill, Maricopa County, Arizona (Montgomery and Associates, 1987).

The Remedial Investigation for the Site was conducted by the PRPs, with oversight provided by EPA and the Arizona Department of Environmental Quality (ADEQ). The Remedial Investigation was initiated in 1988, and the Remedial Investigation report was approved by EPA on April 4, 1991. A Risk Assessment report was completed by EPA on September 12, 1991. The Feasibility Study report, which was completed by the PRPs, was approved by EPA on May 20, 1992.

4. ENFORCEMENT ACTIVITIES

Significant enforcement activities conducted at the Site are summarized in Table 2.

C. HIGHLIGHTS OF COMMUNITY PARTICIPATION

As described below, EPA has satisfied the public participation requirements of CERCLA Section 113(k)(2)(B) and 117. EPA currently maintains Hassayampa Landfill Site information repositories at the Buckeye Library in Buckeye, Arizona and at the EPA Region 9 office in San Francisco. The EPA Region 9 office and the Buckeye Library maintain copies of the entire Administrative Record File. EPA also maintains a computerized Hassayampa Landfill Site mailing list, currently with over 500 addresses. Furthermore, EPA conducted a public meeting and accepted comments on the Proposed Plan and RI/FS. EPA has prepared a Responsiveness Summary (Appendix B) which summarizes EPA's responses to public comments received on the RI/FS and Proposed Plan.

A chronological list of community relations activities conducted by EPA for the Hassayampa Landfill Site is provided in Table 3.

D. SCOPE AND ROLE OF THIS DECISION DOCUMENT WITHIN THE SITE STRATEGY

This ROD selects remedial measures for vadose zone contamination (including soil and soil vapor above the water table) and groundwater contamination at the Hassayampa Landfill Site. The remedial measures selected under this ROD constitute a final remedy for the Site.

Sufficient information currently exists to select a remedy for the Site. However, additional investigation will be conducted during the remedial design phase in order to define the extent of groundwater and soil vapor contamination. This additional investigation is not expected to affect the remedy selected for the Site. As necessary, the remedial design will be modified to reflect the additional data collected.

E. SUMMARY OF SITE CHARACTERISTICS

1. CONTAMINANTS OF CONCERN

Waste and Soil Contamination

Site-related contaminants have been detected in soil, soil vapor, groundwater, and air at the Site.

Soil borings drilled through the disposal pits indicate that the base of these pits (which have since been filled) range in depth from 6 to 20 feet below land surface. Consolidated, moist,

TABLE 2
ENFORCEMENT ACTIVITIES - HASSAYAMPA LANDFILL SITE

DATE	ACTIVITY
1/89	EPA completes Potentially Responsible Party (PRP) Search
2/2/89	General Notice/Information Request letters sent to 9 PRPs
4/11/89	General Notice/Information Request letters sent to 19 PRPs
5/9/89	General Notice/Information Request letters sent to 20 PRPs
6/24/89	Special Notice letters sent to all previously identified PRPs
1/11/90	Remedial Investigation/Feasibility (RI/FS) Consent Order signed by EPA and PRPs
11/19/91	General Notice letter sent to one previously unidentified PRP

TABLE 3
COMMUNITY RELATIONS ACTIVITIES
HASSAYAMPA LANDFILL SITE

1989	Community Relations Plan for the site was completed
1/92	EPA issued a Fact Sheet summarizing results of the Remedial Investigation and Risk Assessment and outlining future site activities.
5/29/92	The Administrative Record for the Site was sent to the Buckeye Library.
6/1/92	A public notice was published in the Buckeye Valley News announcing the availability of the Proposed Plan and the Administrative Record and announcing the dates of the public comment period and public meeting.
6/28/92	EPA issued the Proposed Plan Fact Sheet which explained the results of the RI/FS, described EPA's preferred plan for cleaning up the Site, and announced the dates of the public comment period and public meeting.
6/1/92-6/30/92	Public comment period for the RI/FS and Proposed Plan
6/11/92	EPA conducted a public meeting during which the Proposed Plan was presented and comments were accepted.

colored material encountered within the pits is referred to herein as waste material. Waste samples were collected from Pits 1, 2, 3a, 3c, 4b, and 4c. Soil samples were also collected from beneath Pits 1, 2, 3b, 3c, 4b, 4c. No waste or soil samples were collected from the Special Pits area due to the scattered nature of these pits. Instead soil vapor sampling was performed in the Special Pits area. Vadose zone monitoring borings were also installed at several locations and soil vapor samples were obtained. Figure 5 shows the location of soil borings, vadose zone monitoring borings, and soil vapor samples taken at the Site.

Volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) have been detected in waste and soil within the hazardous waste area. The concentrations of contaminants in waste and soil were compared with Health-Based Guidelines (HBGLs) for surface soil developed by ADHS. The HBGLs are derived from calculations based on ingestion of soil. The HBGLs have not been promulgated. The only pit which contains waste contaminants at concentrations in excess of their HBGLs is Pit 1, which contains tetrachloroethane and trichloroethene at levels in excess of their respective HBGLs (Table 4). Similarly, the only pit which is underlain by soil contaminants at concentrations in excess of their HBGLs is Pit 1, which has 1,1-dichloroethene, dichloromethane, 1,2-dichloropropane, tetrachloroethene, 1,1,1-trichloroethane, and trichloroethene present at levels in excess of their HBGLs (Table 4). It should be noted that the highest level of soil contamination was detected in the deepest sample taken beneath Pit 1 (about 60 feet). This sample was taken immediately above the basaltic lava-flow unit.

Waste and soil contaminant concentrations were also compared to Toxicity Characteristic Leaching Procedure (TCLP) levels and Extraction Procedure Toxicity (EP Tox) levels. The TCLP test was designed to determine the mobility of organic and inorganic analytes, and is one of the criteria used to determine whether a material is a hazardous waste. The EP Tox test preceded the TCLP test and has since been replaced by the TCLP test. The TCLP levels for organics were exceeded only by waste from Pit 1, where levels of 1,1-dichloroethene, trichloroethene, and tetrachloroethene exceeded the TCLP levels. All inorganic waste and soil concentrations were below the TCLP and EP Tox levels with the exception of two compounds. Chromium was detected in waste from Pit 2 at a concentration of 9.9 mg/l (compared to EP Tox level of 5 mg/l) and lead was detected in waste from Pit 3c at a concentration of 11.5 mg/l (compared to EP Tox level of 5 mg/l).

Soil Vapor Contamination

Based on the results of soil vapor surveys, several areas of soil vapor contamination have been identified (Figure 6). The soil

TABLE 4

Comparison of Waste and Soil Concentrations for Pit 1 to Health-Based Guidance Levels

CHEMICAL	PIT 1-MAXIMUM WASTE CONCENTRATION (PPM)	PIT 1-MAXIMUM SOIL CONCENTRATION (PPM)	HEALTH-BASED GUIDANCE LEVEL (PPM)
benzene	ND	1	--
o,p-dichlorobenzene	97	22	1,500
1,1-dichloroethane	ND	47	--
1,1-dichloroethene	30	1630	140
dichloromethane	16	990	94
1,2-dichloropropane	ND	207	12
dimethylbenzenes (total xylene)	77	350	200,000
acetone	ND	2540	14,000
ethylbenzene	ND	57	14,000
toluene	25	510	20,000
methyl ethyl ketone	ND	405	3,400
tetrachloroethene	541	600	14
1,1,1-trichloroethane	914	23,000	4,000
1,1,2-trichloroethane	13	20	60
trichloroethene	107	590	64
trichlorotrifluoroethane	20	12,000	4,200,000

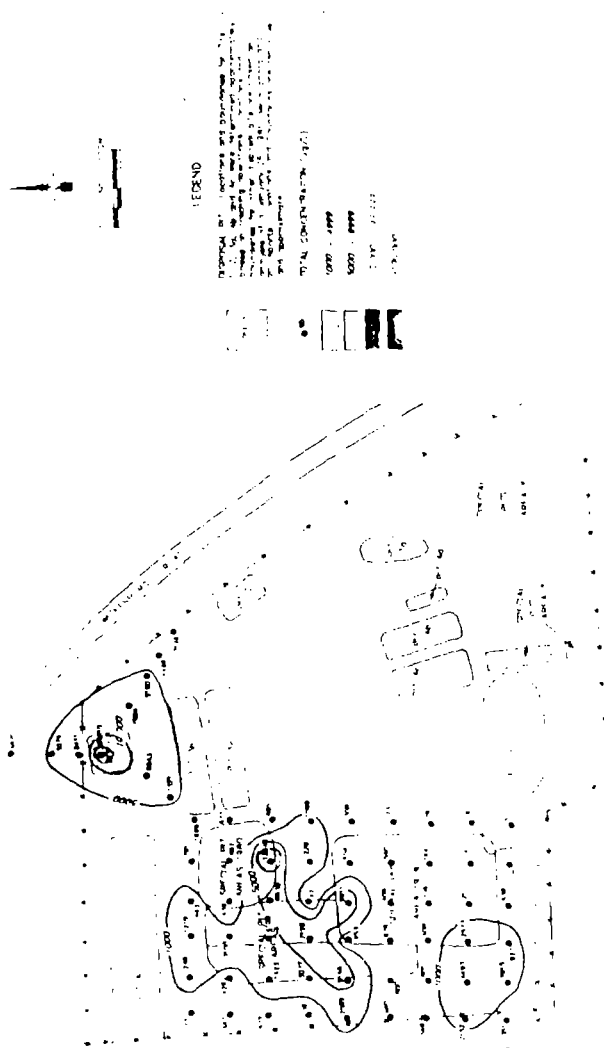


FIGURE 6
TOTAL SOIL GAS CONCENTRATIONS
MASSACHUSETTS
WATERBURY COUNTY

vapor contaminants consist of volatile organic compounds (VOCs) including 1,1-dichloroethene, tetrachloroethene, 1,1,1-trichloroethane, trichloroethene, and trichlorotrifluoroethane. The area in the vicinity of Pit 1 contains the highest levels of soil vapor contamination. Soil vapor contamination also exists in an area north of Pit 1, extending beyond the boundaries of the HWA. Investigation of the extent of soil vapor contamination north of Pit 1 is ongoing and will continue during the remedial design phase. Elevated levels of soil vapor contamination have also been identified in the central and southwest portions of the Special Pits area.

Groundwater

As mentioned previously, two water-bearing units beneath the Site were identified and investigated. The direction of groundwater flow in both units is generally to the south, although local variations in the flow direction may occur. Water level contours and potentiometric contours for Units A and B are presented in Figures 3 and 4), while hydraulic parameters for both units are identified below.

UNIT	GRADIENT	TRANSMISSIVITY gpd/ft	CONDUCTIVITY (gpd/ft ²)
Unit A	0.005	2,000	100
Unit B	0.008	5,000	140

Analytical results for routine constituents indicate that the chemical quality of groundwater in Unit A is consistent with chemical quality of groundwater in shallow aquifers in the landfill area, and that chemical quality of groundwater in Unit B is generally better than that of Unit A.

Volatile organic compounds were detected and confirmed in groundwater samples obtained from Unit A monitor wells MW-1UA, MW-4UA, MW-5UA, MW-6UA, MW-7UA, and from abandoned ADHS well HS-1 (see Figure 3 for well locations). The compounds detected in groundwater from Unit A are presented in Table A-1. Eight of these chemicals have been detected at levels in excess of the selected cleanup standards (see Section I - The Selected Remedy for a discussion of cleanup standards). The approximate target zone for groundwater remedial action is presented in Figure 7. It must be stressed that this target zone does not correspond to a groundwater plume, but merely represents a contiguous area within which are located the monitoring wells that have yielded contaminated groundwater from Unit A. The boundaries of the contaminant plume will be further defined during the remedial design phase. To date, no significant contamination has been detected in groundwater from Unit B.

TABLE 5
SUMMARY OF MONITORING DATA FOR AIR COPCs (concentrations in ug/m3)

STATION	Acetone	Benzene	Carbon monoxide	DROM	1,1-DCA	1,1-DCE	1,2-DCE	Ethyl Benzene	Methylene Chloride	PCE	Toluene	1,1,1-TCA	TCE	TCDF	Xylenes (avg)	Xylenes (max)
A2		3.25	0.68	0.67	0.26	2.35			91.00	0.62	19.00	13.00	0.57		2.60	0.26
B2		3.70	0.70			0.85			71.00		15.00		1.10	2.05		0.90
C2		1.20							12.00							
E2	34.00	4.50	0.80					0.71	141.00		95.00			6.10	1.90	0.57
F2		4.70	0.71	0.61					91.00		26.00			1.90	0.91	
G2		5.10	0.77					0.56	112.00		71.00	4.09		2.51	1.70	0.56
H2		4.40	0.61	0.65					96.00		0.00					
I2		2.89	0.74	0.76		1.10		0.58	116.00		30.00			1.42		
J2			1.30	1.60	1.40	0.90	0.07		204.00	1.50	20.00	46.50	1.60	1.10	0.57	
MEAN (b)	34.00	3.71	0.70	1.16	1.10	2.31	0.07	0.62	103.70	1.06	34.72	21.23	1.00	2.67	1.14	0.57
MAXIMUM	34.00	5.10	1.30	1.60	1.40	0.90	0.07	0.71	204.00	1.50	95.00	46.50	1.60	6.10	1.90	0.57
STD (c)	0.00	1.19	0.21	0.47	0.30	1.61	0.00	0.07	48.91	0.44	29.84	10.13	0.42	1.59	0.48	0.00
SAMPLES	1	8	0	2	2	4	1	3	9	2	8	3	5	7	6	2
95% UCL (d)	34.00	4.40	0.90	1.60	1.45	3.63	0.47	0.68	130.00	1.57	51.08	30.55	1.40	3.66	1.40	0.57

Source: Montgomery, 1991 (Table 1.8)

NOTES: = Statistical summary

DROM: Dibromochloromethane 1,1-DCA: 1,1-Dichloroethane 1,1-DCE: 1,1-Dichloroethane

PCE: Tetrachloroethane 1,1,1-TCA: 1,1,1-Trichloroethane TCE: Trichloroethane

(a) Blank space indicates that the compound was not detected or its presence could be attributed to laboratory contamination.

(b) Arithmetic mean or average. Positively detected values were averaged only. One-half of the sample quantitation limit (SQL) for non-detects was not entered.

(c) Sample standard deviation.

(d) One-sided 95% upper confidence limit = $(\text{average}) + (Z \text{ of } 0.95 \text{ or } 1.645 \times ((\text{standard deviation}) / (\text{sample size})^{1/2}))$, where *** means to the power of.

concentrations were eliminated from further evaluation; and

- With the exception of trichlorofluoroethane (Freon 113), tentatively identified compounds (TICs) were not considered COPCs. Freon 113 was retained due to the large volumes (approximately 10,384 gallons) thought to have been disposed at the Site.

COPCs were identified by environmental medium - subsurface soil (including waste material), groundwater, and air. Onsite surface soil is not considered a medium of concern because the HWA has been covered with clean soil. No COPCs were identified in surface sediments in the vicinity of the landfill.

The specific COPCs identified for subsurface soil, groundwater, and air are presented in Table 6. Vinyl chloride was identified as a COPC even though it was not detected in groundwater at the Site. This decision was based on the fact that vinyl chloride is a potent carcinogen, and is a potential breakdown product of VOCs that were identified at the Site.

b. Exposure Assessment

The objective of exposure assessment is to estimate the types and magnitudes of exposure to COPCs associated with the Site. As part of this process, pathways of current and future exposure are identified. There are several pathways by which individuals could be exposed to contaminants disposed in the HWA. These pathways were evaluated under current land-use and future land-use scenarios.

Under the current land-use scenario, the nearest offsite residence is about 1,000 meters south of the HWA. If contaminated groundwater is allowed to continue to migrate, residents at this location could be exposed to site-related contaminants through the use of domestic wells. Since the prevailing wind direction is from the northeast about 50 percent of the time, the residents at this location could also be exposed to site-related contaminants via inhalation. Exposure of workers to VOCs at the landfill was not evaluated by the Risk Assessment. However, the concentrations of VOCs to which landfill workers are expected to be exposed are well below Permissible Exposure Levels (PELs) established by the Occupational Safety and Health Administration (OSHA). The following exposure routes were evaluated under the current-use scenario:

- Ingestion of VOCs in contaminated groundwater migrating offsite;
- Inhalation of VOCs in contaminated groundwater migrating offsite; and
- Inhalation of VOCs released from the Site to air.

TABLE 6
CHEMICALS OF POTENTIAL CONCERN BY MEDIUM

CHEMICAL OF POTENTIAL CONCERN	MEDIUM OF POTENTIAL CONCERN		
	SOIL	GROUNDWATER	AIR
acetone			X
benzene			X
carbon tetrachloride			X
chloromethane			X
chromium	X		
copper	X		
dibromochloromethane			X
1,2-dichlorobenzene	X		
1,4-dichlorobenzene	X		
1,1-dichloroethane		X	X
1,1-dichloroethene	X	X	X
1,2-dichloroethene		X	
1,2-dichloropropane		X	X
ethylbenzene			X
lead	X		
methylene chloride			X
tetrachloroethene	X	X	X
toluene	X	X	X
1,1,1-trichloroethane	X	X	X
trichloroethene		X	X
Freon 11		X	X
Freon 113	X	X	
xylene	X		X
vinyl chloride		X	

Under the future-use scenario, exposed populations are assumed to be present onsite and domestic wells are assumed to be installed onsite. Potentially exposed populations evaluated included both residential and industrial users. Although residential and industrial use of the landfill seems unlikely in the near future, it is not unrealistic to assume that such use could occur in the more distant future. The following exposure routes were evaluated under the future use scenario for both onsite residential and onsite industrial populations:

- Ingestion of contaminated soil;
- Ingestion of VOCs in groundwater;
- Inhalation of VOCs in groundwater, particularly via showering (residential only); and
- Inhalation of VOCs released from the Site to air.

Exposure intake parameter values were based on standard assumptions and best professional judgement. It should be noted that under all scenarios, it was assumed that the exposed individuals were adults. The only scenario under which children would demonstrate significantly different behavioral patterns which would affect their exposure was onsite residential (ingestion of soil). However, as explained later, this exposure pathway was not evaluated quantitatively.

c. Toxicity Assessment

Both carcinogenic and non-carcinogenic chemicals have been identified in soil and groundwater at the Hassayampa Landfill Site. Reference doses (RfDs) have been developed by EPA for indicating the potential for adverse health effects from exposure to chemicals exhibiting non-carcinogenic effects. The RfD is an estimate, with an uncertainty of approximately an order of magnitude, of a lifetime daily exposure for the entire population (including sensitive individuals) that is expected to be without appreciable risk of deleterious effects. Estimated intake of chemicals from environmental media (e.g. the amount of a chemical ingested from contaminated drinking water) can be compared to RfDs. RfDs are derived from human epidemiological studies or animal studies to which uncertainty factors have been applied (e.g. to account for the use of animal data to predict effects on humans). These uncertainty factors help ensure that the RfDs will not underestimate the potential for adverse non-carcinogenic effects to occur.

For chemicals classified by EPA as proven or probable human carcinogens, risk was evaluated using cancer potency factors (CPF) which have been developed by EPA's Carcinogenic Assessment Group for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. CPFs were multiplied by the estimated intake of the potential carcinogen to provide an upper-bound estimate of the excess lifetime cancer

risk associated with exposure at that intake level. The term upper-bound reflects the conservative estimate of the risks calculated from the CPF. Use of this approach makes underestimation of the actual cancer risks highly unlikely.

EPA's Region 9 office has generated guidance for calculating toxicity values for chemicals considered to be "possible human carcinogens," such as 1,1-dichloroethene (1,1-DCE). EPA Region 9 has proposed developing a modified RfD for 1,1-DCE rather than using its CPF. The modified RfD is calculated by dividing its oral RfD by a safety factor of 10.

d. Risk Characterization

The risk characterization step of the risk assessment process combines the information from the previous steps to determine if an excess health risk is present at the Site. Excess lifetime cancer risks are determined by multiplying the intake levels by the CPFs. These risks are probabilities that are generally expressed in scientific notation (e.g. 1×10^{-6}). An excess lifetime cancer risk of 1×10^{-6} indicates that, as a plausible upper-bound, an individual has a one in one million chance of developing cancer as a result of a site exposure to a carcinogen over a seventy year lifetime under the specific exposure conditions at a site. As is stated in the National Contingency Plan (NCP) (40 C.F.R. Section 300.430 (e)), "For known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper-bound lifetime cancer risk to an individual of between 10^{-4} and 10^{-6} ."

Potential concern for the non-carcinogenic effect of a single contaminant in a single medium is expressed as a hazard quotient (HQ), which is the ratio of the estimated intake derived from the contaminant concentrations in a given medium to the contaminant's reference dose. By adding the HQs for all contaminants within a medium or across all media to which a given population is exposed, the hazard index (HI) can be generated. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media. An HI in excess of one is generally regarded by EPA as representing an unacceptable lifetime, non-carcinogenic human health risk.

As discussed previously, 1,1-DCE is classified as a "possible human carcinogen," reflecting the fact that there is only limited evidence available suggesting that this substance is a human carcinogen. Thus, in accordance with EPA Region 9 guidance, carcinogenic risk for 1,1-DCE was evaluated differently than for other carcinogens. The evaluation of 1,1-DCE's carcinogenicity is analogous to the calculation for the non-carcinogenic contaminants described above. A cancer hazard index (CHI) in

excess of one is regarded by EPA Region 9 as representing an unacceptable lifetime human health risk.

The results of the risk characterization step are summarized in Table 7. This table presents both typical and reasonable maximum exposure (RME) risks calculated for the current offsite residential, future onsite residential, and future onsite commercial or industrial scenarios. The typical (or average) exposure risk is based on exposure to mean contaminant levels and mean values for contact and intake variables, including exposure frequency and duration. The RME risk is based on exposure to a concentration defined as the 95 percent upper confidence limit of the arithmetic mean concentration and 90 to 95 percent percentile values for contact and intake variables.

For a current offsite receptor located at a distance of a thousand meters downwind and downgradient from the site, the risk associated with VOCs in air does not appear significant (HI and CHI are less than one and carcinogenic risk is less than 10^{-6}). For the groundwater pathways, the carcinogenic and non-carcinogenic risk levels are below the benchmarks of 10^{-6} and one, suggesting there is no significant health threat. However, the CHI for 1,1-DCE is nearly four times the acceptable level of one (under both average and RME conditions), suggesting that continued migration of contaminated groundwater could result in unacceptable health risks.*

Under the future onsite residential scenario, the risk associated with ingestion and contact with onsite waste and soil was not evaluated quantitatively and was not summed with the other pathways evaluated, since only limited data from the pits was available at the time of writing the Risk Assessment. However, due to the presence of chromium, lead, and copper and high levels of VOCs and SVOCs in several of the pits, it was assumed that exposure to waste and soil would result in unacceptable health risks for onsite residents (termed significant risk in Table 7). Risk associated with inhalation of ambient air exceeded the acceptable benchmarks of 10^{-6} (average and RME conditions) and 1 (RME conditions only) for carcinogenic risk and CHI, suggesting unacceptable health risks for onsite residents. Finally, the CHI associated with ingestion of groundwater and inhalation of VOCs in groundwater also exceeded 1 (average and RME conditions), again suggesting unacceptable health risks for onsite residents.* Since the total risk calculated for the future onsite residential scenario does not include exposure to waste and soil within the

* If carcinogenic risk for 1,1-DCE had been evaluated using the traditional approach, the RME risk due to ingestion of groundwater and inhalation of VOCs in groundwater under the current offsite residential scenario would have been 1×10^{-3} excess cancers. Similarly, under the future onsite residential scenario, the RME risk would have been 2×10^{-3} excess cancers. Thus, carcinogenic risk under both of these scenarios exceeds the acceptable risk range of 10^{-4} to 10^{-6} excess cancers, suggesting that continued migration of contaminated groundwater could result in unacceptable health risks. 27

TABLE 7
SUMMARY OF ESTIMATED RISKS - CURRENT AND FUTURE LAND USES

Exposure Scenario	Average Exposure		Reasonable Maximum Exposure	
	Excess Cancer Risk	CHI for Noncarcinogenic HI	Excess Cancer Risk	CHI for Noncarcinogenic HI
I. CURRENT OFF-SITE RESIDENTIAL				
Actual				
a. Inhalation of Ambient Air	8E-08	2.9E-03	3E-07	4.5E-03
Total	8E-08	2.9E-03	3E-07	4.5E-03
Potential				
a. Ingestion of Ground Water	1E-07	2.0E-01	4E-07	1.9
b. Inhalation of VOCs in Ground Water	7E-08	1.9	2E-07	1.9
c. Inhalation of Ambient Air	8E-08	2.9E-03	3E-07	4.5E-03
Total	2E-07	3.8	9E-07	3.8
II. FUTURE ON-SITE RESIDENTIAL				
Potential				
a. Ingestion of Ground Water	2E-07	1.8	7E-07	3.2
b. Inhalation of VOCs in Ground Water	1E-07	1.8	4E-07	3.2
c. Inhalation of Ambient Air	2E-05	7.0E-01	8E-05	1.1
d. Exposure to Wastes Below Soil Cover	Significant Risk		Significant Risk	
Total	2E-05	4.2	8E-05	7.5
III. FUTURE ON-SITE COMMERCIAL/INDUSTRIAL				
Potential				
a. Ingestion of Ground Water	7E-08	6.5E-01	2E-07	1.1
b. Inhalation of Ambient Air	1E-05	5.0E-01	5E-05	7.9E-01
c. Exposure to Wastes Below Soil Cover	Significant Risk		Significant Risk	
Total	1E-05	1.2	5E-05	1.2

Notes:

- *Actual* refers to currently complete exposure pathways. Risk numbers are estimates.
- Risk values presented do not account for exposure to wastes below the soil cover. Risks associated with exposure to these wastes are deemed unacceptable since the soil meets the criteria of hazardous waste.

pits (for reasons described above), the total risk values presented in Table 7 for this scenario represent minimum values and are expected to be significantly higher. Still, the total risk exceeded the 10^{-6} benchmark (average and RME), CHI of 1 (average and RME), and HI of 1 (RME).

Similarly, under the future onsite commercial or industrial scenario the risk associated with exposure to waste and soil was not evaluated quantitatively, but was assumed to be significant and indicative of unacceptable health risks for future workers in the HWA. The carcinogenic risk associated with inhalation of ambient air (average and RME) also exceeded the benchmark of 10^{-6} , indicating unacceptable health risks for future workers in the HWA. Again, as described above, the total risk calculated for the future onsite commercial/industrial scenario does not include exposure to waste and soil within the pits, and the total risk values presented in Table 7 for this scenario represent a minimum value and are expected to be significantly higher. Still, the total risk exceeded the 10^{-6} benchmark (average and RME) and CHI of 1 (average and RME).

Due to the threat of exposure to groundwater contaminants as a result of future offsite migration of contaminated groundwater, and the threat of exposure to contaminated waste and soil under the residential and commercial/industrial scenarios; actual or threatened releases of hazardous substances from this Site may present an imminent and substantial endangerment to public health or welfare.

2. ENVIRONMENTAL EVALUATION

The ephemeral Hassayampa river (which drains to the south) and associated riparian habitat, is located about 3/4 mile east of the landfill. Although the Hassayampa Landfill is located within the drainage area of this river, the landfill is located outside of the projected 100-year floodplain of the river.

The Arizona Game and Fish Department (AGFD) identified the Gambel's Quail, Mourning Dove, and Jack Rabbit as the most likely game species in the area and noted that interspersed stands of larger trees may be used by migratory birds. The U.S. Fish and Wildlife Service (USFWS) indicated that no listed or proposed threatened or endangered species or biological resources would likely be affected by contamination at the Site. USFWS did indicate that a candidate category 1 species, the Lowland Leopard Frog, may be found in the vicinity of the Site.

Under current Site conditions, there is no information to suggest that ecological receptors may presently be exposed to Site contamination. The HWA is covered by clean soil and the perimeter is bermed to prevent erosion and offsite drainage. Although contaminated groundwater appears to be migrating south,

the nearest perennial surface water body where groundwater might discharge is the Gila River, which is more than 2 miles from the Site.

With the understanding that the HWA is covered with soil, AGFD concludes that the likelihood of exposure to wildlife seems low. AGFD did identify wetland and riparian habitat and associated species along the Gila River that might be affected if groundwater contamination were to migrate that distance. Groundwater modeling performed in the Risk Assessment indicates that this scenario is unlikely. There are no wetlands or riparian habitat within the boundaries of the Site.

G. DESCRIPTION OF ALTERNATIVES

EPA initially considered a wide range of technologies and alternatives for remediation of the vadose zone (including soil and soil vapor above the water table) and for remediation of groundwater. The alternatives which survived the screening process and were evaluated in the detailed analysis are described below. For all of the alternatives except for the No Action Alternative, two groundwater options were evaluated. Since these two groundwater options are common to all of the alternatives except No Action, the groundwater options will be discussed first.

The cost of each of the alternatives evaluated is presented in Table 8.

1. GROUNDWATER

EPA evaluated two groundwater options for the Site. These two options were identical with the exception that the treatment systems differed. Both options consisted of groundwater extraction, groundwater treatment, reinjection of the treated water, and continued groundwater monitoring. The two treatment options considered were air stripping and ultra-violet (UV) oxidation.

Under these options, groundwater would be extracted from Unit A using several extraction wells. Calculations performed in the Feasibility Study suggest that four to five extraction wells operating at five gallons per minute would achieve ARARs in Unit A within a maximum of 20 to 30 years. However, the exact number of extraction wells, well locations, and pumping rates would be

TABLE 8
COST OF REMEDIAL ALTERNATIVES

ALTERNATIVE	ESTIMATED COST			TOTAL PRESENT WORTH*
	CAPITAL COST	ANNUAL COST	PRESENT WORTH OF ANNUAL COST*	
Alternative 1 No Action	\$0	\$0	\$0	\$0
Alternative 2 Access/Deed Restrictions Cap Groundwater Extraction/ Treatment/Reinjection	Option A \$1,531,300	\$347,500	\$2,213,100	\$3,744,000
	Option B \$2,012,300	\$485,000	\$4,865,100	\$6,877,000
Alternative 3 Access/Deed Restrictions Cap Soil Vapor Extraction/ Treatment Groundwater Extraction/ Treatment/Reinjection/ Monitoring	Option A \$3,878,300	\$347,500	\$2,213,100	\$6,091,400
	Option B 4,359,300	\$490,500	\$4,865,100	\$9,224,400
Alternative 4 Access/Deed Restrictions Cap Soil Vapor Extraction/ Treatment Removal/Soil Washing Pit 1 Groundwater Extraction/ Treatment/Reinjection/ Monitoring	Option A \$4,980,300	\$347,500	\$2,213,100	\$7,193,000
	Option B 5,461,300	\$485,500	\$4,865,100	\$10,325,000

Option A refers to a groundwater treatment system using air stripping.
Option B refers to a groundwater treatment system using UV oxidation.

* Present worth costs are estimated based on a 30-year operating period.

determined during remedial design.

The extracted groundwater would be treated through air stripping or UV oxidation. Air stripping involves the transfer of VOCs dissolved in water to a stream of air flowing counter-current to a stream of water over a bed of packing material.

Contaminants which have been transferred to the air stream, can be discharged directly to the atmosphere or treated prior to discharge. Calculations performed in the Feasibility Study suggest that uncontrolled VOC air emissions from the air stripper would be 1.3 lbs/day, which is substantially below the Maricopa County guideline of 3 lbs/day and the EPA guideline of 15 lbs/day. Nevertheless, vapor phase carbon adsorption would be required to treat air emissions from the air stripper if total VOC emissions at the Site exceed the Maricopa County guideline. UV oxidation uses ultraviolet light and an oxidant (typically hydrogen peroxide or ozone) to destroy organic contaminants. Water and a small amount of chloride salts and carbon dioxide are produced as by-products, but there are no substantial air emissions from the process.

The treated groundwater would be reinjected, either onsite or in the immediate vicinity of the Site. The Feasibility Study indicated that one injection well screened in Unit B and located to the west of the hazardous waste area would be the most advantageous scenario. However, the number of injection wells, the location of the injection wells, depth of the injection wells, and injection rates would be determined during remedial design.

Continued groundwater monitoring would be performed to monitor and ensure the effectiveness of the remedy. The number of monitoring wells and frequency of sampling would have to be sufficient to monitor the effectiveness of the remedy. Additional investigation would be performed during remedial design to characterize the extent of groundwater and soil vapor contamination.

2. VADOSE ZONE

The following alternatives were evaluated for remediation of the vadose zone (including soil and soil vapor above the water table).

Alternative 1 - No Action.

Under this alternative no additional action would be taken at the Site following the RI/FS. Continued monitoring would be required at the Site, although the cost estimate for this alternative does not reflect the cost of performing such monitoring. EPA is required to carry a No Action alternative through the final

detailed analysis.

Alternative 2 - Access & Deed Restrictions, Cap, Groundwater Extraction/Treatment/Reinjection/Monitoring.

Under this alternative the perimeter fence would be upgraded and maintained to restrict unauthorized access to the Site. Long-term deed restrictions would also be imposed, thereby restricting future use of the Site. These restrictions would include (1) access limitations (including a requirement that a fence be maintained around the Site) and (2) use limitations restricting future use of the Site and restricting use of groundwater beneath the Site.

This alternative would also include the construction of a cap over the hazardous waste area. The purpose of this cap would be to prevent direct contact with contaminated waste and soil left in place, to reduce infiltration of water, and to reduce the release of VOC vapors to the atmosphere. At a minimum, this cap would have to meet the substantive requirements of a RCRA cap for Interim Status facilities as described in 40 CFR Parts 265.110 and 265.117 and as described in the "EPA Technical Guidance Document: Final Covers on Hazardous Waste Landfills and Surface Impoundments" (EPA/530-SW-89-047). The construction details and design requirements of this cap would be determined during remedial design.

As described previously, this alternative would also include groundwater extraction, groundwater treatment, reinjection of treated water, and continued groundwater monitoring to ensure the effectiveness of the remedy.

Alternative 3 - Access & Deed Restrictions, Cap, Soil Vapor Extraction/Treatment, Groundwater Extraction/Treatment/Reinjection/Monitoring.

This alternative is identical to Alternative 2 with the exception that it also includes soil vapor extraction and treatment of the extracted soil vapors. Soil vapor extraction would involve the installation of extraction vents in order to remove VOCs and SVOCs from the vadose zone. These vents would be installed within waste and soil in areas where waste and soil contamination has been demonstrated to be a threat to groundwater and where soil vapor has been identified as being present in excess of the soil vapor cleanup standards (see Section I - The Selected Remedy for a discussion of soil vapor cleanup standards). A vacuum system would be applied to the vents in order to induce air flow through the soil, causing the VOCs and SVOCs present in the waste and soil to volatilize into the air stream. Water in the air stream would be condensed, separated from the air stream, and transferred to a water treatment system. The contaminated air stream would then flow through an air and vapor treatment system

consisting of either a vapor phase carbon adsorption unit or a catalytic oxidation system (catalytic oxidation is essentially a thermal incinerator which uses a catalyst to promote the oxidation of VOCs). The specific soil vapor treatment system would be selected during remedial design.

Alternative 4 - Access & Deed Restrictions, Cap, Soil Vapor Extraction/Treatment, Excavation/Soil Washing, Groundwater Extraction/Treatment/Reinjection/Monitoring.

This alternative is identical to Alternative 3, except that it also includes excavation of approximately 1,400 cubic yards of waste from Pit 1, soil washing, and replacement of the treated material. Waste that is present at levels in excess of the Arizona Health-Based Guidance Levels for surface soil would be excavated using standard excavation equipment. The excavated waste would then be treated using a soil washing process. Soil washing involves contacting the waste with water to partition the contaminants from the solid phase to the liquid phase. Excavated wastes would be slurried with water to remove contaminants from the wastes and pumped through a filter press to separate the solids from the wastes. The contaminated water would then be collected for treatment, while the decontaminated soils would be backfilled into Pit 1.

H. SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

Each of the alternatives described in the preceding section was evaluated according to the nine criteria defined below. Each criterion is discussed in detail on the pages that follow this list.

Threshold Criteria

Overall protection of human health and the environment.

Addresses whether the alternative can adequately protect human health and the environment, in both the short and long-term, from contaminants present at the Site.

Compliance with ARARs. Addresses whether the alternative will meet all Federal and State environmental laws that are applicable or relevant and appropriate requirements (ARARs) or provide grounds for invoking a waiver of the ARAR.

Primary Balancing Criteria

Long-term effectiveness and permanence. Refers to the long-term effectiveness and permanence afforded by the alternative along with the degree of certainty that the alternative will prove successful.

Reduction of toxicity, mobility, or volume through treatment. Refers to the degree to which the alternative reduces toxicity, mobility, or volume of the Site contaminants through treatment and reduces inherent hazards posed by the Site.

Short-term effectiveness. Refers to the short-term risks posed to the community, the potential impact on workers, and the potential environmental impact during implementation of the alternative.

Implementability. Refers to the ease or difficulty of implementing the alternative by considering technical feasibility, administrative feasibility, and availability of materials and services.

Cost. Includes capital costs, annual operating and maintenance costs (O & M costs), and net present value of O & M costs.

Modifying Criteria

State acceptance. Indicates whether the State concurs with, opposes, or has no comment on the preferred alternative.

Community acceptance. Indicates whether the community agrees with, opposes, or has no comment on the preferred alternative.

COMPARATIVE ANALYSIS

Overall Protection of Human Health and the Environment

Alternative 1 is not protective of human health and the environment since no action is taken to prevent future exposure to contaminated groundwater. In addition, future land use could result in direct exposure to waste material and contaminated soil.

Alternatives 2, 3, and 4 attain similar levels of protection of human health and the environment by preventing exposure to contaminated groundwater through groundwater extraction and treatment. In addition, these alternatives prevent contact with waste material and contaminated soil through the use of a cap and access and deed restrictions.

Alternatives 3 and 4 attain a slightly greater level of protection as compared to Alternative 2, since they use soil vapor extraction to reduce soil vapor contamination to levels that are protective of groundwater quality. This reduces the chances of exposure to the soil vapor contaminants through exposure to groundwater. Similarly, Alternative 4 attains a slightly greater level of protection as compared to Alternative 3, since contaminated waste from Pit 1 would be

excavated and treated. This provides additional protection in the unlikely event that deed and access restrictions and the cap fail to prevent direct contact with the waste material. The two groundwater treatment options considered, air stripping and UV oxidation, attain similar levels of protection of human health and the environment.

Compliance with ARARs

Alternative 1 does not comply with ARARs since it would not meet the groundwater cleanup standards. Alternatives 2, 3, and 4 all meet ARARs. Under these alternatives, it is estimated that groundwater cleanup standards would be met in a maximum of 20-30 years. However, since Alternatives 3 and 4 use soil vapor extraction to prevent vadose zone contaminants from continuing to contaminate groundwater, it is possible that these two alternatives could attain the groundwater cleanup standards more quickly than Alternative 2.

The two groundwater treatment options considered would both meet the groundwater cleanup standards. It is expected that emissions from the air stripper and the soil vapor extraction system would meet Federal and County guidelines. In the event that these guidelines are exceeded, vapor-phase carbon will be required in order to comply with these standards.

ADEQ Health-Based Guidance Levels for surface soil have been identified as TBCs for Alternative 4, which involves excavation and treatment of contaminated waste and soil. Under this alternative, contaminated waste and soil would be excavated and treated to the ADEQ HBGLS. Alternatives 2 and 3 meet the ADEQ HBGLS for surface soil indirectly by preventing exposure to contaminated waste and soil through the use of access and deed restrictions and a cap.

Long-Term Effectiveness and Permanence

Since Alternative 1 does not involve remediation at the Site, it does not provide long-term protection.

Alternatives 2, 3, and 4 provide similar long-term effectiveness with respect to groundwater by extracting and treating contaminated groundwater. However, Alternatives 3 and 4 provide greater long-term effectiveness with respect to groundwater as compared to Alternative 2, because Alternatives 3 and 4 use soil vapor extraction to prevent vadose zone contamination from being a continuing source of groundwater contamination. Both of the groundwater treatment options, air stripping and UV oxidation, are considered permanent remedies.

Alternatives 2, 3, and 4 use a cap and access and deed restrictions to attain long-term effectiveness and permanence

with respect to soil contamination. Through the use of soil vapor extraction, Alternative 3 attains a greater level of long-term effectiveness than Alternative 2. Alternative 4 provides a slightly greater level of long-term effectiveness since it also includes excavation and soil washing. However, since the volume of soil to be excavated and treated is relatively small (1,400 cubic yards), the added long-term effectiveness is limited.

Reduction of Toxicity, Mobility, or Volume Through Treatment

Alternative 1 does not involve any treatment and would not result in a reduction of toxicity, mobility, or volume.

Alternatives 2, 3, and 4 all attain a significant reduction in mobility and volume of groundwater contaminants through the use of groundwater extraction and treatment. Alternatives 2, 3, and 4 would also result in a reduction in mobility of vadose zone contamination through the use of a cap. The cap would limit the amount of infiltration, and would thereby reduce migration of vadose contamination to groundwater. Of the two groundwater treatment options considered, UV oxidation attains a greater reduction of toxicity, mobility and volume as compared to air stripping.

Alternatives 3 and 4 attain a greater reduction in mobility and volume of vadose zone contamination as compared to Alternative 2, since Alternatives 3 and 4 include the use of soil vapor extraction to treat vadose zone contamination. Alternative 4 attains a slightly greater reduction in mobility and volume as compared to Alternative 3, since Alternative 4 includes soil washing of waste material in Pit 1.

Short-Term Effectiveness

Since water supply wells in the vicinity of the Site have not yet been impacted by site-related chemicals and since access to the Site is currently restricted, there are few short-term risks associated with the Site. Alternative 4, which includes removal of contaminated waste, could potentially pose some short-term risk to remedial workers during implementation; however, this risk could be eliminated through proper engineering, safety, and management practices.

Implementability

All of the alternatives are readily implementable. Alternative 1 is the most readily implementable since it involves no action. Alternatives 2, 3, and 4 rely on demonstrated technologies and proven and effective methods and equipment. Of the groundwater treatment technologies evaluated (which are identical for Alternatives 2, 3, and 4), air stripping would be easier to implement than UV oxidation, since UV oxidation would require a

treatability study prior to implementation.

Cost

Table 8 presents a cost comparison of the four alternatives. Alternative 1 has no additional costs since there would be no action taken at the Site. The costs of Alternatives 2, 3, and 4 increase progressively. A cost sensitivity analysis performed in the feasibility study indicated that the net present worth of Alternative 4 remains significantly higher than the other alternatives irrespective of operating life. Although the groundwater component of the remedy is identical for Alternatives 2, 3, and 4, the cost of the two groundwater treatment technologies considered for these alternatives differs substantially. The cost of UV oxidation is significantly more expensive than the cost of air stripping.

State Acceptance

The State of Arizona, through both the Department of Environmental Quality and the Department of Water Resources, has participated in the RI/FS process. Both agencies have assisted in the development of ARARs and the remedy selection process. Since Alternative 1 is not protective of human health and the environment, this alternative would not be acceptable to either agency. Since Alternative 2 does not include soil vapor extraction and there is potential for continuing contamination of groundwater by soil vapor, this alternative would not be acceptable to either agency. Both Alternatives 3 and 4 would be acceptable to the two agencies.

Community Acceptance

Since Alternative 1 is not protective of human health and the environment, this alternative would not be acceptable to the community. Several community members have expressed a preference for treatment of contaminated soil gas, and as a result it is unlikely that Alternative 2 would be acceptable to the community. Alternatives 3 and 4 generally appear acceptable to the community; although several community members have expressed a preference for Alternative 4 since this alternative includes excavation and treatment of contaminated soil. Finally, several community members expressed a concern over the time required to reach the groundwater cleanup standards under Alternatives 2, 3, and 4.

I. THE SELECTED REMEDY

Alternative 3 is the selected remedy for the Hassayampa Landfill Superfund Site. The selected remedy includes vadose zone (including soil and soil vapor above the water table) remediation and groundwater remediation. Table 9 provides an estimate of the

TABLE 9
ESTIMATED COST OF THE SELECTED REMEDY
HASSAYAMPA LANDFILL SUPERFUND SITE

Remedial Component	Description	Estimated Cost			
		Capital Cost	Annual Cost	Present Worth of Annual Cost	Total Present Worth
B1	Deed and Access Restrictions	\$ 7,300	\$ 500	\$ 9,600	\$ 17,000
B2	Cap	466,000	5,000	97,500	563,000
B8 & B9	Soil Vapor Extraction	2,347,000	Nil	Nil	2,347,000
B10, B11 & B12	Groundwater extraction, treatment, reinjection and monitoring				
	a) air stripping treatment	1,058,000	342,000	2,106,000	3,164,000
	b) UV oxidation treatment	1,519,000	480,000	4,755,000	6,297,000
	TOTAL	a) 3,878,300	347,500	2,213,100	6,091,400
		b) 4,359,300	490,500	4,865,100	9,224,400
	TOTAL IMPLEMENTATION COST			a)	\$ 6,091,400
					(\$ 6,100,000 rounded)
				b)	\$ 9,224,500
					(\$ 9,200,000 rounded)

cost of the selected remedy with respect to the vadose zone and groundwater components.

GROUNDWATER

The groundwater component of the remedy includes extraction of contaminated groundwater, treatment of the water using air stripping, reinjection of the treated water, and continued groundwater monitoring to measure the effectiveness of the remedy. The number, location, and pumping rates of the extraction wells will be determined during the remedial design stage. To date, groundwater contamination has been restricted to Unit A, so it is anticipated that contaminated groundwater will only be extracted from this unit. In the event that groundwater contamination is identified in Unit B, then groundwater will also be extracted from Unit B.

Air stripping, rather than UV oxidation, was selected as the groundwater treatment technology. Both technologies are capable of attaining the selected cleanup standards; however, air stripping is significantly less expensive. It is anticipated that combined air emissions from the air stripper and SVE system at the Site will meet the Federal VOC guideline of 15 pounds per day and the Maricopa County VOC guideline of 3 pounds per day. In the event that these guidelines are exceeded, vapor phase carbon adsorption will be added to the air stripper (the selected remedy already calls for emissions controls to be placed on the SVE system). The treated water meeting the groundwater cleanup standards will be reinjected onsite or in the immediate vicinity of the Site. The number, location, depth, and injection rates of the reinjection well(s) will be determined during remedial design.

Continued groundwater monitoring will be performed to ensure the effectiveness of the remedy. The number of monitoring wells and frequency of sampling will have to be sufficient to measure the effectiveness of the remedy.

Federal MCLs have been selected as groundwater cleanup standards for the Site (Appendix A). The groundwater cleanup standards shall be met at all points within the contaminated aquifer. For the chemicals detected at the Site, the ADEQ MCLs and non-zero MCLGs are identical to the Federal MCLs, and, therefore, were not selected as cleanup standards. For those chemicals for which MCLs do not exist, ADEQ HBGLs have been selected as cleanup standards. There was one chemical, 1,1-dichloroethane, for which no ARARs exist; however, this chemical is present at concentrations below risk-based levels. As a result, no groundwater cleanup standard was selected for this chemical.

VADOSE ZONE

The vadose zone component of the remedy includes installation of a cap over the 10-acre Hazardous Waste Area, soil vapor extraction and treatment, and access and deed restrictions. The purpose of the cap is to prevent direct contact with contaminated waste and soil left in place, to reduce infiltration of water, to reduce the release of VOC vapors to the atmosphere, and to improve the efficiency of the soil vapor extraction system. The design and construction details of the cap will be determined during remedial design; however, at a minimum the cap must meet the substantive capping and maintenance requirements for Resource Conservation and Recovery Act (RCRA) interim status facilities as described in 40 CFR Parts 265.310 and 265.117 and as described in the "EPA Technical Guidance Document: Final Covers on Hazardous Waste Landfills and Surface Impoundments" (EPA/530-SW-89-047).

The vadose zone component of the remedy also includes performing soil vapor extraction at all locations at the Site where soil vapor levels exceed cleanup standards, and where waste and soil contamination has been demonstrated to be a threat to groundwater quality. While the specific areas of the Site which require soil vapor extraction will be determined by EPA during the remedial design, EPA presently expects these areas to include Pit 1, the area of soil vapor contamination north of Pit 1, and several portions of the Special Pits area. The location, number, and construction details of the soil vapor extraction vents will be determined during remedial design. The soil vapors will be treated using vapor phase carbon adsorption or catalytic oxidation, as determined during remedial design. The soil vapor cleanup standards will be levels, established by EPA, that are protective of groundwater quality (meaning that the migration of contaminants from the vadose zone to groundwater will not result in groundwater contamination that exceeds the groundwater cleanup standards), as determined by site-specific analytical modeling.

The selected remedy also includes implementation of access and deed restrictions at the Site. The perimeter fence will be upgraded and maintained to restrict unauthorized access to the Site. Long-term deed restrictions will also be imposed, thereby restricting future use of the Site. These restrictions will include (1) access limitations (including a requirement that a fence be maintained around the Site) and (2) use limitations (restricting future use of the Site and restricting use of groundwater beneath the Site).

Additional investigation will be performed during remedial design to define the extent of groundwater and soil vapor contamination at and in the vicinity of the Site.

The selected remedy for the Site allows contaminated waste and soil to remain onsite. As described in Section II-E of this ROD,

"Summary of Site Characteristics," Pit 1 was the only location where contaminants in waste or soil exceeded ADEQ's proposed HHGLs or EPA's TCLP or EP Tox levels for organic chemicals. There were two pits which had minor exceedences of EP Tox levels for inorganic chemicals. It should be noted that the HHGLs have not been promulgated and that the TCLP levels were not necessarily intended to be used as cleanup standards. Through the use of access and deed restrictions and a cap, the selected remedy will prevent direct contact with contaminated waste and soil. Through the use of soil vapor extraction, the selected remedy will limit the migration of vadose zone contaminants to groundwater.

EPA believes that the selected remedy provides the best balance of tradeoffs with respect to the nine criteria. While Alternative 4 may provide a slight increase in protection of human health and the environment and reduction of toxicity, mobility or volume through treatment; EPA does not believe that these marginal benefits are necessary or justify the additional costs.

J. STATUTORY DETERMINATIONS

Under its legal authorities, EPA's primary responsibility at Superfund sites is to undertake remedial actions that achieve adequate protection of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences that EPA must consider when evaluating remedial alternatives for a Superfund site. Section 121 of CERCLA specifies that when complete, a selected remedial action must comply with ARARs established under Federal and State environmental laws unless a statutory waiver is justified. The selected remedy also must be cost effective and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Finally, Section 121 of CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as their principal element. The following sections discuss how the selected remedy meets these statutory requirements.

1. PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

Threats to human health and the environment posed by the Site include ingestion of contaminated groundwater, inhalation of VOCs in groundwater, and ingestion and contact with contaminated waste and soil. The selected remedy addresses the threat of exposure to contaminated groundwater through the extraction of contaminated groundwater and treatment to Federal and State regulatory levels. The selected remedy requires that these levels be met throughout the contaminated aquifer. The implementation of deed restrictions will provide further

protection by ensuring that drinking water wells are not installed onsite.

By requiring soil vapor extraction to levels that are protective of groundwater quality, the selected remedy ensures that vadose zone contaminants (soil and soil vapor) will not migrate to groundwater. The selected remedy addresses the threat of ingestion and contact with contaminated waste and soil through the use of access and deed restrictions and a cap. The cap will also minimize infiltration and limit the migration of vadose zone contamination to groundwater.

2. COMPLIANCE WITH ARARs

The selected remedy will comply with all Federal and more stringent State ARARs identified in Appendix A. In addition, the selected remedy will comply with TBCs identified in Appendix A.

3. COST-EFFECTIVENESS

The selected remedy is cost-effective in addressing the risks posed by the Site. Section 300.430(f)(ii)(D) of the NCP states that once a remedial action satisfies the threshold criteria (overall protection of human health and the environment and compliance with ARARs), cost-effectiveness is determined by evaluating the following three balancing criteria: long-term effectiveness and permanence; reduction of toxicity, mobility or volume through treatment; and short-term effectiveness.

The selected remedy provides the best overall effectiveness at the lowest cost. Alternatives 3 and 4 attain a similarly high level of overall protection of human health and the environment; compliance with ARARs; long-term effectiveness and permanence; and short-term effectiveness. Alternative 4 would provide a slightly greater reduction of toxicity, mobility or volume through treatment; however, EPA does not believe this slight reduction merits the significant increase in cost.

The groundwater treatment technology selected for the Site also provides the best overall effectiveness at the lowest cost. Two groundwater treatment technologies, air stripping and UV oxidation, were evaluated as part of Alternatives 2, 3, and 4. Air stripping (which is a component of the selected remedy) provides a similar level of protection and treatment at substantially less cost than UV oxidation.

4. UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE

EPA has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment

technologies can be used at the Site in a practicable manner. The selected remedy provides the best balance of trade-offs in terms of long-term effectiveness and permanence, reduction in toxicity, mobility or volume through treatment, short-term effectiveness, implementability, and cost, while also considering State and community acceptance.

The selected remedy will result in a reduction in the volume and mobility of groundwater contaminants through groundwater extraction, treatment, and reinjection. Continued groundwater monitoring will be performed to ensure that the remedy is protective of human health and the environment. The selected remedy uses soil vapor extraction and treatment to prevent vadose zone contamination from continuing to contaminate groundwater. Additionally, a cap will be used to prevent contact with contaminated waste and soil and to further limit the migration of vadose zone contamination to groundwater.

5. PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT

The selected remedy satisfies the statutory preference for remedies that employ treatment as a principal element. By treating the contaminated groundwater using air stripping, the treated water can be returned to its beneficial use through reinjection. By performing soil vapor extraction and treatment, vadose zone contamination will be prevented from continuing to contaminate groundwater.

The selected remedy does allow a relatively small volume of contaminated soil (1,400 cubic yards) which exceeds ADEQ Health-Based Guidance Levels to remain onsite. By requiring access and deed restrictions and a cap, the selected remedy will prevent exposure to these contaminants. EPA does not believe that treatment of this contaminated soil is necessary or worth the additional cost.

K. SIGNIFICANT CHANGES

There are no significant differences between the remedy identified in the Proposed Plan and the remedy selected in the Record of Decision.

APPENDIX A ARARS AND OTHER CRITERIA FOR THE SELECTED REMEDY AT THE HASSAYAMPA LANDFILL SITE

This appendix identifies ARARs and other criteria to be considered (TBCs) for the selected remedy for the Hassayampa Landfill Site. The selected remedy shall meet the requirements of the ARARs identified below. Furthermore, unless otherwise indicated, the selected remedy shall also meet the requirements of the TBCs identified below.

CHEMICAL-SPECIFIC ARARs AND TBCs

Table A-1 presents chemical-specific ARARs and TBCs for water arranged by chemical compound. The Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs) are based on human consumption of water for drinking, cooking, bathing, etc. Economic considerations and technical feasibility of treatment processes are included in the justification for these levels. MCLs are applicable to drinking water at the tap pursuant to the SDWA, and are ARAR for treated water when the end use is drinking water. Pursuant to 40 C.F.R. Section 300.430(e)(2)(i)(B), MCLs and non-zero Maximum Contaminant Level Goals (MCLGs) are relevant and appropriate as in-situ aquifer standards for groundwater that is or may be used as drinking water.

ADEQ Aquifer Water Quality Standards (ADEQ MCLs), established pursuant to A.R.S. Section 49-223 are identical to SDWA MCLs for the compounds detected in groundwater at the Hassayampa Landfill Site. Since ADEQ MCLs are not more stringent than the SDWA MCLs, these ADEQ standards are not ARARs and are not included in Table A-1.

ADEQ HBGLs for groundwater are TBCs for the Site. The HBGLs are derived from calculations based on ingestion of groundwater. The HBGLs have not been promulgated. ADEQ HBGLs were selected as cleanup standards only for chemicals for which no SDWA MCL or MCLGs existed.

Federal Health Advisories, which are criteria developed by either EPA's Office of Drinking Water Health Advisory Program or the National Academy of Sciences (NAS), were considered at the Site. The Federal Health Advisories are based on NAS-suggested Non-Adverse Response Levels (SNARLs) at which no known or anticipated adverse human health effects would occur, given an adequate margin of safety. These Federal Health Advisories were not selected as cleanup standards, since they were less stringent than the SDWA MCLs and ADEQ Health-Based Guidance Levels (HBGLs).

LOCATION-SPECIFIC ARARS

Table A-2 identifies location-specific ARARs and TBCs for the Hassayampa Landfill Site. Location-specific ARARs are concerned with the area in which the Site is located. Actions may be required to preserve or protect aspects of the environment or cultural resources of the area that may be threatened by the existence of the Site, or by remedial actions to be undertaken at the Site.

ACTION-SPECIFIC ARARS

Table A-3 identifies action-specific ARARs for the Hassayampa Landfill Site. The actions included in Table A-3 are components of the selected remedy.

ADDITIONAL STATE ARARS and TBCs

Arizona Revised Statute Section 49-224 is applicable or relevant and appropriate at the Hassayampa Landfill Site. A.R.S. Section 49-224 classifies all Arizona aquifers as drinking water aquifers. Section 45-454.01 of the Arizona Groundwater Management Act (GMA) (A.R.S. Sections 45-454.01), is also applicable or relevant and appropriate to the Site. All offsite uses of treated groundwater are subject to state law outside the context of the Superfund action. However, for activities conducted onsite, the substantive portions of the provisions referenced within Section 45-454.01 of the GMA shall be applicable or relevant and appropriate.

While the State of Arizona has cited 49 A.R.S. Section 282(D)(2) as an ARAR, EPA has not identified this Arizona law as an ARAR since it does not establish groundwater cleanup standards that are more stringent than the federal cleanup standards selected for the Hassayampa Landfill Site. Like Section 300.430(a)(iii) of the National Contingency Plan, 49 A.R.S. Section 282(D)(2) evinces an intent that remedial actions shall, to the extent practicable, provide for the control, management, or cleanup of hazardous substances so as to allow the maximum beneficial use of the waters of the State. The maximum beneficial use of groundwater in Arizona appears to be "drinking water protected use," which is defined as the protection and maintenance of aquifer quality for human consumption. See Ariz. Admin. Comp. R. 18-11-501; 49 A.R.S. Section 224 (which classifies all aquifers in Arizona as drinking water aquifers). Under 49 A.R.S. Section 223, aquifer water quality standards are established as primary maximum contaminant levels, which are the groundwater cleanup standards selected in this ROD in accordance with CERCLA Section 121(d).

TABLE A-1 - HASSAYAMPA LANDFILL SITE
GROUNDWATER CLEANUP STANDARDS, CHEMICAL SPECIFIC ARARs AND REQUIREMENTS TO BE CONSIDERED
CONCENTRATIONS IN PARTS PER BILLION (ppb)

Compound(s)	Maximum Concentration Detected	Selected Cleanup Standard	Applicable or Relevant and Appropriate	Other Criteria To Be Considered									
				SDWA MCL	SDWA MCLG	SDWA Proposed MCL	SDWA Proposed A MCLG	1-day 10 kg	10-day 10kg	Longer term 10 kg	Longer term 10 kg	117- time 10 kg	ARAR
benzene	5	5	5	0				200	200	NA	NA	NA	
1,1,1-trichloroethane	25	1400	NA	NA	NA	NA	NA	40000	40000	4000	4000	1400	1400
1,1,2-trichloroethane	2000	7	7	7				2000	1000	1000	400	7	7
1,1,1-trichloroethane	27	N/A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1,1,1,2-tetrachloroethane	1800	200	200	200				100000	40000	4000	100000	200	200
1,1,2,2-tetrachloroethane	800	5	5	0				700	700	700	2600	N/A	NA
1,2-dichloroethane	160	70	70	70				4000	3000	3000	13000	70	70
1,2-dichloroethane (Freon 113)	160	100	100	100				20000	2000	2000	4000	100	100
1,2-dichloropropane	4	5	5	0				NA	90	NA	NA	NA	NA
acrylonitrile	10	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
chloroethene	13	100	100	100				2000	2000	2000	7000	100	100
1,1-dichloroethane	140	7100	NA	NA	NA	NA	NA	7000	7000	7000	10000	200	2100
1,1,1-trichloroethane (Freon 113)	610	210000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	21000
ethyl methyl ketone	40	170	NA	NA	NA	NA	NA	80000	8000	1000	9000	200	170
dichloromethane	15	5	NA	NA	5	0	0	10000	2000	NA	NA	NA	NA
1,2-dichloroethane	25	5	5	0				2000	2000	1000	4000	N/A	NA
toluene	15	1000	1000	1000				20000	2000	2000	1000	1000	1000
1,1,1-trichloroethane (R)	63	100	100	NA									
1,1,2-trichloroethane	115	5	5	0				NA	NA	NA	NA	NA	
perchloroethylene	40	50	100	100				1400	1400	240	840	170	100
styrene (total)	1	10000	10000	10000				40000	40000	10000	100000	10000	
vinyl chloride (C)	ND	2	2	0				1000	1000	10	70	NA	

Notes:
 (a) Chemicals for which the maximum concentration exceeds the cleanup standard
 (b) Compounds listed were detected and confirmed in groundwater samples taken during the RI and
 (c) Compound(s) field investigation
 (d) The sum of trichloroethane MCL=100 (includes trichloroethane, bromochloroethane, dibromochloroethane, and
 trichloroethane)
 (e) Vinyl chloride has never been detected in groundwater samples at the site, but has been detected in all
 QM samples
 MCL: Maximum Contaminant Level
 MCLG: Maximum Contaminant Level Goal
 SDWA: Safe Drinking Water Act
 NA: Not Applicable
 U.S. EPA Health Advisories
 1-day/10kg: Concentration of compound in drinking water that could pose a risk if consumed by a 10 kg
 child for 1 day
 10-day/10kg: Concentration of compound in drinking water that could pose a risk if consumed by a 10 kg
 child for 10 days
 Longer Term/10kg: Concentration of compound in drinking water that could pose a risk if consumed by a 10 kg
 child for more than 10 days
 117-time/10kg: Concentration of compound in drinking water that could pose a risk if consumed by a 10 kg
 child for more than 117 days
 117-time/10kg: Concentration of compound in drinking water that could pose a risk if consumed by a 10 kg
 child for a lifetime

Sheet 1 of 1

Location	Requirement	Prerequisite(s)	Criteria	AKAR	Comments
Watershed/Stream	Action to avoid adverse effects to historic natural, historic and prehistoric natural and cultural resources	Action to avoid adverse effects to historic natural and cultural resources and related cultural values, including historic and prehistoric and other kinds of resources	Executive Order No. 13176, Department of the Interior, Federal Lands Planning Act (FLPA), Appendix A3	AKAR	Historic resources are identified to ensure that proposed projects will avoid impacts to historic resources. Determination of flood plain management, including the registration and preservation of such lands is required to avoid flood impacts. If new or improved levees are to be located in a floodplain, accepted floodplain management flood control measures shall be undertaken to protect floodplain resources. Wherever practical, structures shall be elevated above the flood plain level rather than flood and. As part of the determination of flood plain management measures and protection, floodplain resources and their natural beneficial values can be evaluated and be considered.
Watershed area where action may cause irremediable harm, risk or destruction of significant artifacts	Action to monitor and preserve artifacts	Alteration of terrain that necessitates significant scientific, prehistoric, historic, or archaeological data	National Archaeological and Historical Preservation Act (16 USC Section 469), 36 CFR Part 63	AKAR	No artifacts are known to have been found in the vicinity of the site. If artifacts are identified at the site, this requirement will be applicable.
Unique habitat upon which endangered species or threatened species depend	Action to conserve endangered species or threatened species, including consultation with the Department of the Interior	Determination of endangered species or threatened species	Endangered Species Act of 1973 (16 USC 1531 et seq.), 50 CFR Part 200 and 50 CFR Part 402	AKAR	No endangered or threatened species have been identified at the site. If such species are identified at the site, this requirement will be applicable.
Area affecting stream of river	Action to protect fish or wildlife	Disruption, channeling of, or other activity that modifies a stream of river and affects fish or wildlife	Fish and Wildlife Conservation Act (16 USC 1661 et seq.), 40 CFR Part 302	AKAR	This activity requires coordination with the Department of Fish and Wildlife prior to any activity that would affect fish or wildlife in the United States. No activity is expected in the future of the river and the needed remedy is not expected to affect the river of fish and wildlife habitat and spawning. This requirement will be applicable if the selected activity will impact the river.
Recreation Area	Requires Ability to consider protection of riparian areas for wilderness planning	Impact on riparian areas	Executive Order No. 13176, Department of the Interior, Federal Lands Planning Act	AKAR	The riparian area within the drainage area of the Housatonic River is a riparian area as defined in 16 USC 1661 and 40 CFR Part 302.

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Action	Requirements	Prerequisite	Clause	AKAR	Comments
Container storage facilities	Containers or material bags must be <ul style="list-style-type: none"> Maintained in good condition Compatible with hazardous waste to be stored Used during storage except to add or remove waste 	NOCCA Hazardous waste treated or stored facilities must use a temporary permit before first use. Disposal of storage containers must be done in a container not a leaky container. Leaking containers must be replaced, repaired, disposed of or handled.	401 CFR 261.71, 261.72, 261.73, 261.74	AKAR	These requirements are applicable to the treatment, storage and disposal facilities. The treatment, storage and disposal system must not be used to store hazardous waste that is not permitted for storage.
	Proper container storage areas needed for identification		401 CFR 261.74	AKAR	
	Place containers in a raised track free zone and protect from contact with accumulated liquid		401 CFR 261.75	AKAR	
	Provide containment system with a capacity of 10 percent of the volume of containers of free liquids				
	Remove spilled or leaked waste in a timely manner to prevent overflow of the containment system				
	Keep containers of hazardous waste at least 30 feet from the facility's property line		401 CFR 261.76	AKAR	
	Keep incompatible materials separate, separate incompatible materials stored near each other in a leak or other manner		401 CFR 261.77	AKAR	
	Leakage removal of hazardous waste and residues from the containment system and secondary containment for all containers must be		401 CFR 261.78	AKAR	

ANALYSIS OF THE DATA AND CONCLUSIONS FOR THE HAWAIIAN ISLANDS

Action	Knowledge	Emotions	Culture	Aktiv	Comments
1. The first step is to identify the problem.	The first step is to identify the problem.	The first step is to identify the problem.	The first step is to identify the problem.	10	The first step is to identify the problem.
2. The second step is to analyze the problem.	The second step is to analyze the problem.	The second step is to analyze the problem.	The second step is to analyze the problem.	20	The second step is to analyze the problem.
3. The third step is to develop a plan.	The third step is to develop a plan.	The third step is to develop a plan.	The third step is to develop a plan.	30	The third step is to develop a plan.
4. The fourth step is to implement the plan.	The fourth step is to implement the plan.	The fourth step is to implement the plan.	The fourth step is to implement the plan.	40	The fourth step is to implement the plan.
5. The fifth step is to evaluate the results.	The fifth step is to evaluate the results.	The fifth step is to evaluate the results.	The fifth step is to evaluate the results.	50	The fifth step is to evaluate the results.
6. The sixth step is to report the findings.	The sixth step is to report the findings.	The sixth step is to report the findings.	The sixth step is to report the findings.	60	The sixth step is to report the findings.
7. The seventh step is to disseminate the information.	The seventh step is to disseminate the information.	The seventh step is to disseminate the information.	The seventh step is to disseminate the information.	70	The seventh step is to disseminate the information.
8. The eighth step is to monitor the progress.	The eighth step is to monitor the progress.	The eighth step is to monitor the progress.	The eighth step is to monitor the progress.	80	The eighth step is to monitor the progress.
9. The ninth step is to adjust the plan as needed.	The ninth step is to adjust the plan as needed.	The ninth step is to adjust the plan as needed.	The ninth step is to adjust the plan as needed.	90	The ninth step is to adjust the plan as needed.
10. The tenth step is to complete the project.	The tenth step is to complete the project.	The tenth step is to complete the project.	The tenth step is to complete the project.	100	The tenth step is to complete the project.

$$L_{\mathcal{A}}^{\infty} = \mathcal{A} \oplus \mathcal{A}^*$$

Table 10.5					
Area	Activities	Frequency	Location	AKS	Comments
1. General	1.1. General information about the project 1.2. General information about the project 1.3. General information about the project	1.1. General information about the project 1.2. General information about the project 1.3. General information about the project	1.1. General information about the project 1.2. General information about the project 1.3. General information about the project	AKS	1.1. General information about the project 1.2. General information about the project 1.3. General information about the project
2. Specific	2.1. Specific information about the project 2.2. Specific information about the project 2.3. Specific information about the project	2.1. Specific information about the project 2.2. Specific information about the project 2.3. Specific information about the project	2.1. Specific information about the project 2.2. Specific information about the project 2.3. Specific information about the project	AKS	2.1. Specific information about the project 2.2. Specific information about the project 2.3. Specific information about the project
3. Other	3.1. Other information about the project 3.2. Other information about the project 3.3. Other information about the project	3.1. Other information about the project 3.2. Other information about the project 3.3. Other information about the project	3.1. Other information about the project 3.2. Other information about the project 3.3. Other information about the project	AKS	3.1. Other information about the project 3.2. Other information about the project 3.3. Other information about the project

APPENDIX D
RESPONSIVENESS SUMMARY - HASSAYAMPA LANDFILL SUPERFUND SITE

The Proposed Plan for the Hassayampa Landfill Superfund Site was issued to the public on June 28, 1992. The Proposed Plan described EPA's preferred alternative for cleanup of the Site and announced the public comment period from June 1 through June 30, 1992. On June 11, 1992, EPA presented the Proposed Plan at a public meeting and accepted comments regarding the Proposed Plan.

During the public meeting, Doris M. Heisler, representing the Tonopah Valley Association, read a letter containing comments on the Proposed Plan. This same letter, dated June 11, 1992, was submitted in writing during the public comment period. A second letter, dated June 29, 1992, was submitted by Stephen M. Quigley of Conestoga-Rovers and Associates Limited on behalf of the Hassayampa Steering Committee. A summary of the comments provided, as well as EPA's response to each comment, is provided below.

Commenter: Doris M. Heisler, Tonopah Valley Association

This letter did not include specific comments on the Proposed Plan, but rather described several concerns relating to the landfill and asked several questions pertaining to the Proposed Plan.

1. Comment:

The commenter expressed concern over past acceptance of hazardous waste at the landfill and continued acceptance of municipal waste at the landfill. The commenter expressed a preference that the landfill be closed and converted to a transfer station.

1. EPA Response:

The Hassayampa Landfill no longer accepts hazardous waste. The acceptance of municipal waste at the landfill is in compliance with Federal and State regulations.

2. Comment:

The commenter assumed that hazardous waste materials and contaminated soils would be removed from the landfill and that contaminated groundwater would be treated.

3. EPA Response:

Contaminated groundwater at the Site will be extracted and treated. Contaminated soil gas that poses a threat to groundwater quality will also be treated. The selected

remedy does allow contaminated soil and waste material to remain in place at the Site. The volume of contaminated soil and waste which exceeds the Arizona Health-Based Guidance Levels for surface soil is relatively small (1,400 cubic yards). Exposure to this material will be prevented through the use of a cap and access and deed restrictions. The soil vapor extraction system will minimize migration of soil and waste contaminants to groundwater.

4. Comment:

The commenter requested that the technologies associated with the various alternatives be explained further. Additionally, the commenter asked whether the cap would consist of compacted soil, a plastic liner, or both.

4. EPA Response:

The technologies associated with the various alternatives considered are described in detail in the Feasibility Study and the Description of Alternatives section of the Record of Decision (ROD). The Feasibility Study and ROD are part of the Administrative Record for the Site, which is available for review at the Buckeye library located at 310 North 6th Street in Buckeye, Arizona. The technologies associated with the alternatives were further described during the public meeting.

The cap design will meet the substantive requirements of a RCRA cap for Interim Status facilities, as described in 40 CFR Parts 265.310 and 265.117, and as described in the "EPA Technical Guidance Document: Final Covers on Hazardous Waste Landfills and Surface Impoundments" (EPA/530-SW-89-047). Final cap design will be determined during the remedial design phase. It is expected that the cap will consist of a compacted soil cover. It is possible, but not necessarily required, that a synthetic liner could be used in the cap construction. The cap will cover the 10-acre hazardous waste area of the landfill.

5. Comment:

The commenter expressed a preference for a remedy that includes deed restrictions and treatment of soil gas.

5. EPA Response:

Deed restrictions and soil gas treatment are components of the selected remedy.

6. Comment:

The commenter expressed concern over risk factors associated with the Site and expressed a preference for cleanup methods which offer the greatest level of protection of public health, whether or not these methods are required by law or meet regulatory standards.

6. EPA Response:

The selected remedy is protective of human health and the environment. Of the cleanup alternative evaluated for the Site, Alternative 3 (the selected remedy) and Alternative 4 would attain similarly high levels of protection. Alternative 4 would provide a slightly higher level of protection since contaminated waste and soil from Pit 1 would be excavated and treated. This would provide additional protection in the event that the cap and access and deed restrictions fail to prevent contact with contaminated waste and soil. EPA believes that the cap and access and deed restrictions provide sufficient protection from exposure to contaminated waste and soil left in place at the Site.

Commenter: Stephen M. Quigley, Conestoga-Rovers and Associates

1. Comment:

The Proposed Plan incorrectly states that samples of groundwater collected from Arizona Department of Health Services (ADHS) monitoring wells installed at the Site were found to be contaminated with VOCs. In fact only samples from one of the ADHS wells contained groundwater contamination.

1. EPA Response:

EPA agrees with the commenter and this statement has been corrected in the Record of Decision.

2. Comment:

The Proposed Plan incorrectly states that groundwater at the Site is contaminated by SVOCs.

2. EPA Response:

EPA agrees with the commenter and the appropriate corrections have been made in the Record of Decision.

3. Comment:

The Proposed Plan states that the cap for the hazardous

waste area would be required to meet or exceed the requirements of RCRA. The commenter requested that the appropriate requirements, as stated in the RCRA regulations, which relate to the design and construction of the cap be presented in the ROD.

3. EPA Response:

EPA agrees with the commenter. Additional language describing the specific regulations which apply to design, construction, and maintenance of the cap have been added to the ROD. The cap design will meet the substantive requirements of a RCRA cap for Interim Status facilities, as described in 40 CFR Parts 265.310 and 265.117 and as described in the EPA Technical Guidance Document: Final Covers on Hazardous Waste Landfills and Surface Impoundments (EPA/530-SW-89-047). EPA believes that it is sufficient to cite the specific regulations and guidance documents, and that it is not necessary to fully describe the requirements of these regulations and guidance documents in the text of the ROD.

4. Comment:

The following important documents should have been included in the Administrative Record for the Site:

- Stage I Report
Remedial Investigation/Feasibility Study
Hassayampa Landfill Site, Maricopa County, AZ
March 13, 1992
- Liquid Waste Evaluation Report
Hassayampa Landfill Site, Maricopa County, AZ
October 9, 1990
- Response to Agency Comments
Technical Screening Memorandum
Hassayampa Landfill Site
January 29, 1992

Several other documents are also missing from the Administrative Record. These documents include several monthly data submittals and progress reports, letters notifying EPA of schedules and procedures for field work, EPA letters of approval for field work, distribution lists for project deliverables, the draft RI report, the draft FS report, and various correspondence pertaining to the RI/FS. While it is not necessary to include these other documents in the Administrative Record, the Hassayampa Steering Committee wants to note the existence of these documents.

4. EPA Response:

EPA agrees with the commenter that the Stage I RI/FS Report, the Liquid Waste Evaluation, and the Response to Agency Comments - Technical Screening Memorandum should be included in the Administrative Record. These documents have subsequently been added to the Administrative Record.

With respect to the other documents identified as missing from the Administrative Record, EPA believes that the Administrative Record for the Site is complete. If the Hassayampa Steering Committee wishes to specifically identify other documents that belong in the Administrative Record, EPA will consider inclusion of these documents.

APPENDIX C

HASSAYAMPA LANDFILL

SUPERFUND SITE

Maricopa County, Arizona

ADMINISTRATIVE RECORD CUMULATIVE INDEX

May 29, 1992

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IX

NOTE: Appendix C, the Administrative Record Index, is available from EPA upon request.

0222-00785

APPENDIX B

SCOPE OF WORK FOR THE HASSAYAMPA LANDFILL SUPERFUND SITE

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I. INTRODUCTION

The following scope of work ("SOW") outlines the work to be performed by Settling Defendants at the Hassayampa Landfill Superfund Site in Maricopa County, Arizona ("the Site"). The definitions set forth in Section IV of the Consent Decree ("CD") shall also apply to this SOW unless expressly provided herein. The purpose of this SOW is to fully implement the remedy as described in the Record of Decision (ROD) for the Hassayampa Landfill Superfund Site, dated August 6, 1992, and to achieve the cleanup levels and other Performance Standards for the Site set forth in the ROD, CD and this SOW. It is not the intent of this document to provide task specific engineering or geological guidance. The requirements of this SOW will be further detailed in work plans and other plans to be submitted by the Settling Defendants to EPA for approval as set forth in this SOW.

II. OVERVIEW OF THE REMEDY

THE OBJECTIVES OF THIS REMEDIAL ACTION ARE TO:

Prevent or mitigate the continued release of hazardous substances, pollutants and contaminants to the underlying aquifers;

Reduce to acceptable levels the risks to human health associated with direct contact with hazardous substances, pollutants or contaminants from the Site;

Reduce to acceptable levels the risks to human health associated with inhalation of hazardous substances, pollutants or contaminants from the Site;

Eliminate or minimize the threat posed to human health and the environment from current and potential migration of hazardous substances in the groundwater and subsurface and surface soil and sediment at the Site;

Reduce concentrations of hazardous substances, pollutants and contaminants in the surface and subsurface soil, and in the groundwater at the Site to levels specified by all applicable or relevant and appropriate requirements (ARARs); and

Reduce the volume, toxicity and mobility of hazardous substances, pollutants or contaminants at the Site.

III. REMEDY COMPONENTS

The Settling Defendants shall implement the Remedial Action at the Hassayampa Landfill Site, which includes vadose zone remediation and groundwater remediation.

A. VADOSE ZONE REMEDIATION

The Settling Defendants shall implement the vadose zone component of the remedial action, which includes the implementation of access and deed restrictions, capping of the 10-acre Hazardous Waste Area (as defined in the ROD), and performance of soil vapor extraction.

A.1. Major Components of the Vadose Zone Remediation Which Settling Defendants Shall Conduct Include:

a. Implementation of Access and Deed Restrictions at the Site. Settling Defendants shall upgrade the Site's perimeter fence to restrict unauthorized access. Settling Defendants shall also impose long-term deed restrictions at the Site. These restrictions will include (1) access limitations (including a requirement that a fence be maintained around the Site) and (2) use limitations (restricting future use of the Site and restricting use of the groundwater beneath the Site).

b. Cap Installation. The Settling Defendants shall install a cap over the 10-acre Hazardous Waste Area to: (i) prevent direct contact with contaminated waste and soil left in place; (ii) reduce infiltration of water; (iii) reduce the release of VOC vapors to the atmosphere; and (iv) improve the efficiency of the soil vapor extraction system. The precise design and construction details of the cap will be determined during remedial design. The capping Performance Standards are discussed in A.2(a) below.

c. Soil Vapor Extraction. The Settling Defendants shall perform soil vapor extraction ("SVE") at all locations on the Site where soil vapor levels exceed performance standards, and where waste and soil contamination has been demonstrated to be a threat to groundwater quality. EPA shall determine the specific areas of the Site requiring soil vapor extraction during the remedial design phase (see discussion below in Section II.A.2.b). These areas are likely to include Pit 1, the area of soil vapor contamination north of Pit 1, and several portions of the Special Pits area. EPA shall determine the location, number, and construction details of the soil vapor extraction vents during the remedial design phase. Settling Defendants shall treat soil vapors using vapor phase carbon adsorption or catalytic oxidation, as determined by EPA during remedial design.

A.2. Vadose Zone Remediation Performance Standards

Settling Defendants shall meet all Performance Standards, as defined in the Consent Decree, including the following:

a. Capping Performance Standards

Settling Defendants shall install a cap which, at a minimum, meets the substantive capping and maintenance requirements for Resource Conservation and Recovery Act (RCRA) interim status facilities as described in 40 C.F.R. Parts 265.310 and 265.117, and which meets the substantive capping requirements (design and maintenance) described in the "EPA Technical Guidance Document: Final Covers on Hazardous Waste Landfills and Surface Impoundments" (EPA/530-SW-89-047).

b. Soil Vapor Extraction Performance Standards

EPA shall establish soil vapor extraction performance standards which, at a minimum, shall be protective of groundwater quality (meaning that the migration of contaminants from the vadose zone to the groundwater will not result in groundwater contamination that exceeds the groundwater cleanup standards). Using site-specific analytical modeling, Settling Defendants shall calculate proposed soil vapor extraction cleanup standards for all chemicals identified in Table A-1 of Appendix A of the ROD. The analytical model, the model methodology, the input parameters used in the model, and the proposed soil vapor extraction cleanup standards calculated from the model must be approved by EPA before the Settling Defendants' proposed soil vapor extraction cleanup standards can become final cleanup standards. The State shall also be given an opportunity to review and comment (comments shall be made to EPA) on the analytical model, model methodology, model input parameters and the proposed soil vapor extraction standards.

A.3. Vadose Zone Treatability Study

Settling Defendants shall conduct a Vadose Zone Treatability Study to evaluate the soil vapor extraction component of the remedial action and to determine soil vapor extraction performance standards. Settling Defendants shall conduct an on-site pilot scale treatability test using soil vapor extraction. Settling Defendants shall perform site-specific analytical modeling as part of the Vadose Zone Treatability Study from which they will propose, and EPA will determine, soil vapor cleanup standards that are protective of groundwater quality (meaning that the migration of contaminants from the vadose zone to groundwater will not result in groundwater contamination that exceeds the groundwater cleanup standards).

B. GROUNDWATER REMEDIATION

The Settling Defendants shall, at a minimum, extract the

contaminated groundwater at the Site, treat the contaminated groundwater using air stripping, reinject the treated water, and continue groundwater monitoring to measure the effectiveness of the remedy.

B.1. The Major Components of the Groundwater Remediation Which Settling Defendants Shall Conduct Include:

a. Extraction of Contaminated Groundwater from Unit A. Currently it is believed that groundwater contamination at the Site has been restricted to aquifer Unit A (as described in Section II.A.7 of the ROD). At present, EPA anticipates that it will be necessary for Settling Defendants to extract groundwater from only Unit A. If groundwater contamination is identified in any other aquifer units, including Unit B (as described in Section II.A.7 in the ROD), then Settling Defendants shall also extract and treat groundwater from these units. The number, location, and pumping rates of the extraction wells shall be determined by EPA during the remedial design phase of the work.

Settling Defendants shall operate the groundwater extraction, treatment and reinjection system until the groundwater cleanup standards set forth in the ROD and Section II.B.2(a) of this SOW are achieved throughout the contaminated aquifer, and the Settling Defendants have demonstrated compliance with these groundwater cleanup standards in accordance with the Performance Standards Verification Plan (see Task V of this SOW).

b. Treatment of Contaminated Groundwater. The Settling Defendants shall treat the contaminated groundwater using air stripping technology. The Settling Defendants shall reinject the treated water meeting the groundwater cleanup standards on-site, or in the immediate vicinity of the Site. The number, location, depth, and injection rates of the reinjection well(s) shall be determined during remedial design.

c. Groundwater Monitoring. The Settling Defendants shall implement a groundwater monitoring program for both aquifer Units A and B, as identified in the Performance Standards Verification Plan (see discussion below in Section II.B.3).

B.2. Groundwater Remediation Performance Standards

Settling Defendants shall meet the Performance Standards, as defined in the Consent Decree, including the following:

a. Settling Defendants shall undertake a groundwater remediation program which shall achieve the Safe Drinking Water Act Maximum Contaminant Levels (MCLs) set forth in

Appendix A of the ROD. For those chemicals for which MCLs have not been established, Settling Defendants shall attain the Arizona Department of Environmental Quality (ADEQ) Health-Based Guidance Levels (HBGLs) set forth in Appendix A of the ROD. Settling Defendants shall continue to treat the contaminated groundwater at the Site until the cleanup standards discussed above are met throughout the contaminated aquifer, as determined by monitoring the wells designated as verification points pursuant to the Performance Standards Verification Plan approved by EPA (see Task V of this SOW).

b. Settling Defendants shall design, construct and operate the groundwater extraction, treatment and reinjection system in accordance with the ARARs identified in the ROD.

c. Settling Defendants shall ensure that the combined Volatile Organic Compound ("VOC") air emissions from the air stripper and the SVE system at the Site meet the three (3) pound per day limit placed on VOC emissions in the January 1991 implementing guidelines for Maricopa County Rules 210, 320 and 330. If EPA determines that the three (3) pound per day VOC limit is being exceeded or has been exceeded, Settling Defendants shall add vapor phase carbon adsorption to the air stripper (the selected remedy already requires emissions controls to be placed on the SVE system).

B.3. Groundwater Monitoring

Settling Defendants shall implement a groundwater monitoring program as established in the EPA approved Performance Standards Verification Plan. Settling Defendants shall design the groundwater monitoring program with enough monitoring wells to provide sufficient groundwater monitoring data, as established in the Performance Standards Verification Plan, with which to evaluate the ongoing effectiveness of the groundwater extraction system. Settling Defendants shall monitor the performance of the treatment system on at least a quarterly basis (or less often if approved by EPA), and shall report the results to EPA. EPA may require that Settling Defendants make adjustments to the treatment system as warranted by the treatment system monitoring results. Examples of adjustments may include changes in flow and pumping rates, changes in the treatment scheme, or the addition of effluent polishing procedures.

After demonstrating compliance with the groundwater Performance Standards (see Section II.B.2.a) at the verification points set out in the EPA approved Performance Standards Verification Plan for a period of at least two consecutive quarters (6 months), Settling Defendants may, with EPA approval, suspend groundwater pumping at the Site. After groundwater pumping is suspended, the Settling Defendants shall continue to monitor the groundwater in

accordance with the EPA approved Performance Standards Verification Plan. If monitoring indicates that the groundwater Performance Standards set forth in Section II.B.2(a) of this SOW are being exceeded at any time after pumping has been discontinued, Settling Defendants shall recommence extraction and treatment of the groundwater until the Performance Standards are achieved. Settling Defendants shall continue monitoring and periodic extraction and treatment of the groundwater at the Site until EPA determines that the Performance Standards have not been exceeded for a continuous five (5) year period, or until 30 years after the completion of closure of the landfill unit as required under Section 265.117(a) of RCRA, whichever is later.

IV. PLANNING AND DELIVERABLES

Settling Defendants shall document the specific details of the activities required under this SOW in a Remedial Design ("RD") Work Plan and a Remedial Action ("RA") Work Plan. The Settling Defendants' Plans, specifications, submittals, and other deliverables shall be subject to EPA review and approval (or review and comment in the case of the Prefinal Design document and the Health and Safety Plans) in accordance with Section XII of the Consent Decree and the Schedule of the Major Deliverables contained in this SOW. In addition, the State shall be afforded an opportunity to review and comment (comments shall be submitted to EPA) on the Settling Defendants' Plans, specifications, submittals, and other deliverables in accordance with Section XII of the Consent Decree. With the exception of the Health and Safety Plans and the Prefinal Design document, all deliverables from the Settling Defendants are subject to EPA approval. With the exception of the Prefinal Design document, Settling Defendants shall revise all deliverables requiring revision as a result of EPA's comments within thirty (30) days of receiving EPA's comments. EPA may shorten this thirty (30) day period if the Settling Defendants' original submittal is late or if the submittal is in a form deemed unacceptable by EPA.

Settling Defendants shall submit a technical memorandum documenting any need for additional data along with the proposed Data Quality Objectives ("DQOs") whenever such requirements are identified. Settling Defendants shall fulfill additional data and analysis needs identified by EPA during the RD/RA process consistent with the general scope and objectives of the Consent Decree, including this SOW.

Settling Defendants shall perform the following tasks:

1. TASK I - PROJECT PLANNING

A. Site Background

Settling Defendants shall gather and analyze the existing

information regarding the Site and shall conduct a visit to the Site to assist in planning the RD/RA as follows:

1. Collect and Analyze Existing Data and Document the Need for Additional Data

Before planning RD/RA activities, Settling Defendants shall review and compile all existing Site data. Settling Defendants shall include in their review the ROD, the Remedial Investigation and Feasibility Study ("RI/FS"), and other available data related to the Site. Settling Defendants shall utilize this information in determining the additional data needed for the RD/RA implementation. Final decisions on the necessary data and DQOs shall be made by EPA.

- B. Project Planning

Once Settling Defendants have collected and analyzed existing data, Settling Defendants shall plan the specific project scope. Settling Defendants shall meet with EPA regarding the following activities before proceeding with Task II.

1. Additional Investigation

As described in the ROD, Settling Defendants shall conduct an additional investigation at the Site to: (i) fully characterize the extent of vadose zone contamination present at the Site; (ii) identify the impact of this vadose zone contamination on groundwater quality; and (iii) fully characterize the groundwater contamination at the Site. Settling Defendants shall submit an Additional Investigation Work Plan, Sampling and Analysis Plan, Health and Safety Plan, and Additional Investigation Report to EPA. All plans must be reviewed and approved by EPA prior to the initiation of field activities (the Health and Safety Plan will not require EPA approval).

- a. Additional Investigation Work Plan

Settling Defendants shall prepare an Additional Investigation Work Plan for EPA review and approval, which shall describe the additional investigation to be performed at the Site. Settling Defendants shall include in this Work Plan a schedule of the tasks required of the Settling Defendants, including, but not limited to, the: procurement of contractors, the completion of sample collection, sample analysis, and report preparation.

- b. Additional Investigation Sampling and Analysis Plan

Settling Defendants shall prepare an Additional Investigation Sampling and Analysis Plan ("SAP") for EPA

review and approval, to: ensure that sample collection and analytical activities are conducted in accordance with technically acceptable protocols; and ensure that the data generated will meet the DQOs established. The SAP shall include a Field Sampling and Analysis Plan ("FSAP") and a Quality Assurance Project Plan ("QAPP").

Settling Defendants shall draft the FSAP to include detailed descriptions of the sampling and data-gathering methods that shall be used on the project. The FSAP shall include sampling objectives, sample location (horizontal and vertical) and frequency, sampling equipment and procedures, and sample handling and analysis. Settling Defendants shall draft the Field Sampling and Analysis Plan so that a field sampling team unfamiliar with the Site would be able to gather the samples and field information required.

Settling Defendants shall include in the QAPP a description of the project objectives and organization, functional activities, and quality assurance and quality control (QA/QC) protocols that shall be used to achieve the desired DQOs. The DQOs shall, at a minimum, use analytical methods for obtaining data of sufficient quality to meet National Contingency Plan ("NCP") requirements as identified in Section 300.435 (b) of the NCP. In addition, the QAPP shall address personnel qualifications, sampling procedures, sample custody, analytical procedures, and data reduction, validation, and reporting.

Settling Defendants shall demonstrate in advance and to EPA's satisfaction, that each laboratory it may use is qualified to conduct the proposed work and meets the requirements specified in Section IX of the Consent Decree. EPA may require that Settling Defendants submit detailed information to demonstrate that the laboratory is qualified to conduct the work, including information on personnel qualifications, equipment and material specification, and laboratory analyses of performance samples (blank and/or spike samples).

To the extent possible, Settling Defendants may utilize and reference the existing RI/FS SAP in preparing the Additional Investigation SAP.

c. Additional Investigation Health and Safety Plan

Settling Defendants shall prepare an Additional Investigation Health and Safety Plan that complies with OSHA regulations and protocols, and Settling Defendants' health and safety program. The Additional Investigation Health and Safety Plan shall include a health and safety risk analysis, a description of monitoring and personal

protective equipment, medical monitoring, and provisions for Site control. EPA will not approve the Additional Investigation Health and Safety Plan, but rather EPA will review it to ensure that all necessary elements are included, and that it provides for the protection of human health and the environment.

To the extent possible, the Additional Investigation Health and Safety Plan may utilize and reference the existing RI/FS Health and Plan.

d. Additional Investigation Report

Following completion of the Additional Investigation, Settling Defendants shall submit a report summarizing the findings of this investigation for EPA review and approval. Settling Defendants shall include in this the Additional Investigation Report a discussion of the findings and a presentation of the results of the additional investigation using appropriate tables and figures.

2. Vadose Zone Treatability Study: Settling Defendants shall conduct a Vadose Zone Treatability Study (described in Section II.A.3 of this SOW) to ensure that the selected remedy will attain the Performance Standards outlined in the ROD, the Consent Decree and this SOW. As part of the Vadose Zone Treatability Study, Settling Defendants shall calculate proposed soil vapor extraction performance standards for EPA review and approval. EPA shall establish these soil vapor extraction performance standards at levels which are protective of the groundwater (meaning that the migration of contaminants from the vadose zone to groundwater will not result in groundwater contamination that exceeds the groundwater cleanup standards).

Settling Defendants shall use the Vadose Zone Treatability Study results and operating conditions in the detailed design of the selected remedy. EPA shall evaluate the Vadose Zone Treatability Study results to determine whether the proposed treatment is capable of attaining the ARARs and other Performance Standards specified in the ROD, Consent Decree and this SOW.

Settling Defendants shall submit a Vadose Zone Treatability Study Work Plan, Sampling and Analysis Plan, Health and Safety Plan, and Vadose Zone Treatability Study Report to EPA. All plans must be reviewed and approved by EPA prior to the initiation of field activities (the Health and Safety Plan will not require EPA approval). The Settling Defendants shall conduct the Vadose Zone Treatability Study in the following manner:

a. Vadose Zone Treatability Study Work Plan

Settling Defendants shall prepare a Vadose Zone Treatability Study Work Plan for EPA review and approval. The Vadose Zone Treatability Study shall determine whether the particular technology and vendor of this technology is capable of meeting the Vadose Zone Performance Standards. EPA review and approval of the Vadose Zone Work Plan shall mean only that EPA considers the proposed technology, vendor, and study approach appropriate for the conditions at the Site.

Settling Defendants shall prepare the Vadose Zone Treatability Study Work Plan to include descriptions of the: technology to be tested; the test objectives; experimental procedures; treatability conditions; measurements of performance; analytical methods; data management and analysis; health and safety; and residual waste management. The DQOs for the treatability study shall be documented as well. The Vadose Zone Treatability Study Work Plan shall also describe pilot plant installation and start-up, pilot plant operation and maintenance procedures, and pilot plant operating conditions. The Vadose Zone Treatability Study Work Plan shall include a schedule for performing the treatability study tasks including, but not limited to: the procurement of contractors; the completion of sample collection; sample analysis; and report preparation.

Settling Defendants shall prepare the Vadose Zone Treatability Study Work Plan to include a thorough discussion of the method to be used to calculate the Soil Vapor Extraction Performance Standards. This discussion shall include identification of the specific analytical model to be used, identification of the specific model input parameters, details of running the model, and all other pertinent information.

The Settling Defendants shall describe in detail in the Vadose Zone Treatability Study Work Plan the treatment process, and how the proposed vendor or technology will meet the Performance Standards for the Site. The Treatability Study Work Plan shall discuss how Settling Defendants propose to meet all air discharge requirements at the Site. Settling Defendants shall also discuss all permitting requirements in the Vadose Zone Treatability Study. Additionally, the Treatability Study Work Plan shall discuss the proposed final treatment and disposal of all material generated by the treatment system.

b. Vadose Zone Treatability Study Sampling and Analysis Plan

Settling Defendants shall prepare a separate Vadose Zone Treatability Study SAP for EPA review and approval. This SAP shall be designed to monitor pilot plant performance. The Vadose Zone Treatability SAP will meet the requirements of a SAP as described in the Additional Investigation Sampling and Analysis Plan Section of this SOW (see Section IV.B.1.b of this SOW).

c. Vadose Zone Treatability Study Health and Safety Plan

Settling Defendants shall develop a Vadose Zone Treatability Study Health and Safety Plan. EPA will not approve this Health and Safety Plan, but rather EPA will review it to ensure that all necessary elements are included, and that the plan provides for the protection of human health and the environment.

d. Vadose Zone Treatability Study Report

Following completion of the Vadose Zone Treatability Study, Settling Defendants shall submit to EPA, for review and approval, a Vadose Zone Treatability Study Report on the performance of the technology. EPA will evaluate the results of the Treatability Study Report for completeness and appropriateness based on Site conditions. The Treatability Study Report shall discuss the performance of the technology and vendor of the technology compared with the Performance Standards established for the Site. The Treatability Report shall evaluate the treatment technology's effectiveness, implementability, cost, and actual results as compared with predicted results. The Treatability Report shall also evaluate full-scale application of the technology, including a sensitivity analysis identifying the key parameters affecting full-scale operation.

Should the treatability study results indicate that the proposed technology will meet the Performance Standards, EPA may instruct Settling Defendants to include the Treatability Study Final Report in the Preliminary Design Report, allowing the study results and operating conditions to be used in the detailed design of the selected remedy. EPA Approval of the Treatability Study Report shall mean only that EPA finds the study methodology acceptable. Approval of the study, results, or the Treatability Study Report by EPA shall not imply or be construed to mean that EPA is guaranteeing the performance of this or any vendor or technology. Should the treatability study not be approved by EPA, EPA may require Settling Defendants to conduct additional treatability studies to fully evaluate the available treatment systems.

Settling Defendants shall also include in the Vadose Zone Treatability Study Report the results of analytical modeling performed to calculate the proposed Soil Vapor Extraction Performance Standards. If the Soil Vapor Extraction Performance Standards are approved by EPA, EPA will instruct the Settling Defendants to incorporate these performance standards into the Remedial Design. Should the Soil Vapor Extraction Performance Standards not be approved by EPA, EPA may require that Settling Defendants recalculate these Soil Vapor Extraction Performance Standards. At any point before, during, or after the Vadose Zone Treatability Study, EPA may determine that it is necessary for EPA to calculate the Soil Vapor Extraction Performance Standards.

2. TASK II - REMEDIAL DESIGN

Settling Defendants shall prepare the Remedial Design to provide the technical details for the implementation of the Remedial Action in a manner which complies with currently accepted environmental protection technologies and standard professional engineering and construction practices. The Remedial Design shall include clear and comprehensive design plans and specifications.

A. Remedial Design Planning

Settling Defendants shall submit a Remedial Design Work Plan as part of remedial design planning. Upon approval of the Remedial Design Work Plan, Settling Defendants shall implement the Remedial Design Work Plan in accordance with the design management schedule contained therein. Plans, specifications, submittals, and other deliverables shall be subject to EPA review and approval in accordance with Section XII of the Consent Decree. Review and/or approval of design submittals only allows Settling Defendants to proceed to the next step of the design process. It does not imply acceptance of later design submittals that have not been reviewed; nor does it imply that the remedy, when constructed, will meet Performance Standards.

1. RD Work Plan

Settling Defendants shall submit a Remedial Design (RD) Work Plan to EPA for review and approval. The RD Work Plan shall be developed in conjunction with the Additional Investigation Work Plan (and associated SAP and Health and Safety Plan), and the Vadose Zone Treatability Study Work Plan (and associated SAP and Health and Safety Plan). The RD Work Plan shall include: a comprehensive description of the plans and specifications to be prepared; and a comprehensive design management schedule for the completion of each major activity and submission of each deliverable.

Specifically, Settling Defendants shall include in the RD Work Plan:

- a. A statement, incorporating the results of the Additional Investigation, of the problem(s) and potential problem(s) posed by the Site, and the objectives of the Remedial Design and Remedial Action.
- b. A background summary setting forth the following:
 - 1) A description of the Site including the geographic location and the physiographic, hydrologic, geologic, demographic, ecological, and natural resource features;
 - 2) A synopsis of the history of the Site including a summary of past disposal practices and a description of previous responses that have been conducted by local, State, Federal, or private parties;
 - 3) A summary of the existing data including physical and chemical characteristics of the contaminants identified and their distribution among the environmental media at the Site.
- c. A detailed description of the tasks to be performed, information needed for each task, information to be produced during and at the conclusion of each task, and a description of the work products that shall be submitted to EPA. This description shall include the deliverables set forth in the remainder of Task II.
- d. A schedule for completion of each required activity and submission of each deliverable required by the Consent Decree and this SOW. This schedule shall also include information regarding timing, initiation and completion of all critical path milestones for each activity and/or deliverable.
- e. A project management plan, including a data management plan, a provision for monthly reports to EPA, and a provision for meetings and presentations to EPA at the conclusion of each major phase of the Remedial Design and Remedial Action ("RD/RA"). The data management plan shall address the requirements for project management systems, including tracking, sorting, and retrieving the data along with an identification of the software to be used, minimum data requirements, data format and backup data management. The plan shall address both data management and document control for all activities conducted during

the RD/RA.

- f. A description of the community relations support activities to be conducted during the RD. At EPA's request, Settling Defendants shall assist EPA in preparing and disseminating information to the public regarding the RD work to be performed.

B. Preliminary Design

Settling Defendants shall prepare a Preliminary Design which shall begin with the initial design and end with the completion of approximately 30 percent of the design effort for the vadose zone and groundwater remedies, except that the Preliminary Design shall include approximately 75 percent of the design effort for the capping, access and deed restriction components of the vadose zone remedy.

The Preliminary Design shall include field verification of the Site conditions. Settling Defendants shall address and outline the technical requirements of the Remedial Action so that they may be reviewed by EPA to determine if the final design will provide an effective remedy. Supporting data and documentation shall be provided with the design documents defining the functional aspects of the project. EPA approval of the Preliminary Design is required before Settling Defendant proceed with further design work, unless specifically authorized by EPA.

In accordance with the design management schedule established in the Remedial Design Work Plan, Settling Defendants shall submit to EPA the Preliminary Design submittal which shall consist of the following:

1. Results of Data Acquisition Activities and Treatability Studies.

Data and treatability study results gathered during the project planning phase, shall be compiled, summarized, and submitted along with an analysis of the impact of the results on design activities. Settling Defendants shall document surveys conducted to establish topography, rights-of-way, easements, and utility lines. Settling Defendants shall also discuss any utility requirements and acquisition of access, through purchases or easements, that are necessary to implement the Remedial Action ("RA").

2. Design Criteria Report

In the Design Criteria Report, Settling Defendants shall define in detail the concepts supporting the technical aspects of the design. Specifically, the Settling

Defendants shall include in the Design Criteria Report the preliminary design assumptions and parameters, including:

- a. Waste characterization
- b. Pretreatment requirements
- c. Volume of each media requiring treatment
- d. Treatment schemes (including all media and by-products)
- e. Input/output rates
- f. Influent and effluent qualities
- g. Materials and equipment
- h. Performance Standards
- i. Long-term monitoring requirements

3. Preliminary Plans and Specifications

Settling Defendants shall submit the required drawings and layouts, describing conceptual aspects of the design, unit processes, etc. In addition, an outline of the required specifications, including Performance Standards, shall be submitted. Settling Defendants shall submit clear and organized construction drawings, and shall outline the technical specifications in a manner reflecting the final specifications.

4. Preliminary Construction Schedule

Settling Defendants shall submit a preliminary construction schedule to EPA, which includes approximate time-frames for initiation and completion of construction of all components of the remedial action.

5. Plan for Satisfying Permitting Requirements

Settling Defendants shall perform all activities in accordance with the requirements of any applicable federal and state laws and regulations. Any off-site disposal shall be in compliance with the policies stated in the Procedure for Planning and Implementing Off-site Response Actions (Federal Register, Volume 50, Number 214, November, 1985, pages 45933 - 45937), and Federal Register Volume 55, Number 46, March 8, 1990, page 8840, and the National Contingency Plan, Section 300.400. In preparing the Plan for Satisfying Permitting Requirements, Settling Defendants shall identify the off-site disposal/discharge permits that are required, the time required to process the permit applications, and a schedule for submittal of the permit applications. Settling Defendants shall submit final design plans and specifications which are consistent with the technical requirements of all applicable or relevant and appropriate federal and state environmental regulations, unless a waiver has been issued.

C. Prefinal/Final Design

Settling Defendants shall submit the Prefinal Design when the design work is approximately 90 percent complete in accordance with the approved design management schedule. Settling Defendants shall address comments generated from the Preliminary Design Review and clearly show any modification of the design as a result of incorporation of the comments. The Prefinal Design shall function as the draft version of the Final Design. After EPA review and comment on the Prefinal Design, the Final Design shall be submitted. Settling Defendants shall have all Final Design documents certified by a Professional Engineer registered in the State of Arizona. EPA approval of the Final Design is required before Settling Defendants initiate the RA, unless specifically authorized by EPA. Settling Defendants shall submit the following items as part of the Prefinal/Final Design:

1. Complete Design Analyses

The Complete Design Analyses should be an updated submittal of the Design Criteria Report. The selected design shall be presented along with an analysis supporting the design approach. Settling Defendants shall include design calculations with the Prefinal and Final Designs.

2. Complete Plans and Specifications

Settling Defendants shall include a complete set of construction drawings and specifications which describe the selected design.

3. Final Construction Schedule

Settling Defendants shall submit a final construction schedule to EPA for approval.

4. Construction Cost Estimate

Settling Defendants shall include an itemized estimate with the Prefinal/Final Design that is within +15 percent to -10 percent of actual construction costs.

3. TASK III - REMEDIAL ACTION

Settling Defendants shall perform the Remedial Action pursuant to the Consent Decree, so as to: implement the response actions selected in the ROD; achieve the Performance Standards in the ROD, SOW and Consent Decree; and reflect the findings of the Remedial Design planning phase.

A. Remedial Action Planning

Concurrent with the submittal of the Preliminary Design, Settling Defendants shall submit a Remedial Action ("RA") Work Plan, a Construction Management Plan, a Construction Quality Assurance Plan, a Construction Contingency Plan, and a Construction Health and Safety Plan. The RA Work Plan, Construction Management Plan, Construction Quality Assurance Plan and Contingency Plan must be reviewed and approved by EPA before Settling Defendants may initiate the Remedial Action. EPA will only review and comment on the Construction Health and Safety Plan prior to the initiation of the Remedial Action. The State shall be afforded an opportunity to review and comment (comments shall be made to EPA) on the above plans in accordance with Section XII of the Consent Decree.

Upon approval of the RA Work Plan and the Final Design, Settling Defendants shall implement the RA Work Plan in accordance with the construction management schedule. Settling Defendants shall not undertake significant field changes to the Remedial Action ("RA") as set forth in the RA Work Plan and Final Design without the prior approval of EPA. The RA shall be documented in enough detail to produce as-built construction drawings after the RA is complete. Deliverables shall be submitted to EPA for review and approval in accordance with Section XII of the Consent Decree. Review and/or approval of submittals does not imply acceptance of later submittals that have not been reviewed; nor does it imply that the remedy, when constructed, will meet the Performance Standards.

1. Remedial Action Work Plan

Settling Defendants shall submit, for EPA review and approval, a Remedial Action Work Plan which provides a detailed plan of action for completing the RA activities. The objective of this work plan is to provide for the safe and efficient completion of the RA. The RA Work Plan shall be developed in conjunction with the Construction Management Plan, the Construction Quality Assurance Plan, the Construction Health and Safety Plan, and the Contingency Plan, although each plan may be delivered under separate cover. The RA Work Plan shall include a comprehensive description of the work to be performed and the Final Construction schedule for completion of each major activity and submission of each deliverable.

Specifically, Settling Defendants shall include in the RA Work Plan:

- a. A detailed description of the tasks to be performed and a description of the work products to be submitted to EPA. This includes the

deliverables set forth in the remainder of Task III.

- b. A schedule for completion of each required activity and submission of each deliverable required by the Consent Decree, including those in this SOW. The RA Work Plan should include provisions for phasing construction of the various components of the vadose zone and groundwater remedies, in order to speed construction of these components.
- c. A project management plan, including provision for monthly reports to EPA and meetings and presentations to EPA at the conclusion of each major phase of the RA.
- d. A description of the community relations support activities to be conducted during the RA. At EPA's request, Settling Defendants shall assist EPA in preparing and disseminating information to the public regarding the RA work to be performed.

2. Project Delivery Strategy

Settling Defendants shall submit, for EPA review and approval, a document describing the strategy for delivering the project. This document shall address the management approach for implementing the Remedial Action, including procurement methods and contracting strategy, phasing alternatives, and contractor and equipment availability concerns.

3. Construction Management Plan

Settling Defendants shall develop a Construction Management Plan which details how the construction activities are to be coordinated during the RA. Settling Defendants shall designate a person to be its representative on-site during the Remedial Action, and shall identify this person in the Plan. This Plan shall also identify other key project management personnel and lines of authority, and provide descriptions of the duties of the key personnel along with an organizational chart. In addition, a plan for the administration of construction changes, and EPA review and approval of those changes shall be included.

4. Construction Quality Assurance Plan

Settling Defendants shall develop and implement a Construction Quality Assurance Program to ensure, with a reasonable degree of certainty, that the completed Remedial

Action meets or exceeds all design criteria, plans and specifications, and Performance Standards. The Construction Quality Assurance Plan shall incorporate relevant parts of the Performance Standards Verification Plan (see Task V). At a minimum, Settling Defendants shall include the following elements in the Construction Quality Assurance Plan:

- a. A description of the quality control organization, including a chart showing lines of authority, identification of the members of the Independent Quality Assurance Team (IQAT), and acknowledgment that the IQAT will implement the control system for all aspects of the work specified and shall report to the project coordinator and EPA. The IQAT members shall be representatives from testing and inspection organizations and shall be responsible for the QA/QC of the Remedial Action. The members of the IQAT shall have a good professional and ethical reputation, previous experience in the type of QA/QC activities to be implemented, and demonstrated capability to perform the required activities. They shall also be independent of the construction contractor.
- b. The name, qualifications, duties, authorities, and responsibilities of each person assigned a QC function.
- c. Description of the observations and control testing that will be used to monitor the construction and/or installation of the components of the Remedial Action. This includes information which certifies that personnel and laboratories performing the tests are qualified and the equipment and procedures to be used comply with applicable standards. Any laboratories to be used shall be specified. Acceptance/Rejection criteria and plans for implementing corrective measures shall be addressed.
- d. A schedule for managing submittals, testing, inspections, and any other QA function (including those of contractors, subcontractors, fabricators, suppliers, purchasing agents, etc.) that involve assuring quality workmanship, verifying compliance with the plans and specifications, or any other QC objectives. Inspections shall verify compliance with all environmental requirements and include, but not be limited to, air quality and emissions monitoring records and waste disposal records, etc.

- e. Reporting procedures and reporting format for QA/QC activities including such items as daily summary reports, schedule of data submissions, inspection data sheets, problem identification and corrective measures reports, evaluation reports, acceptance reports, and final documentation.
- f. A list of definable features of the work to be performed. A definable feature of work is a task which is separate and distinct from other tasks and has separate control requirements.

4. Construction Contingency Plan

Settling Defendants shall prepare a Construction Contingency Plan, which includes Air Monitoring, Spill Control and Countermeasures Plans. The Contingency Plan submitted by Settling Defendants is to be written for the on-site construction workers and the local affected population. Settling Defendants shall include the following items in the Construction Contingency Plan:

- a. The name of the person who will be responsible in the event of an emergency incident.
- b. A description of procedures to be followed and authorities to be contacted in the event of an emergency incident.
- c. An Air Monitoring Plan which incorporates the following requirements:
 - 1) Air monitoring shall be conducted both on the Site and at the perimeter of the Site. The chemical constituents that were identified in Appendix A of the ROD shall serve as a basis of the sampling for and measurement of pollutants in the atmosphere. Air monitoring shall include personnel monitoring and Treatment Systems Performance monitoring.
 - 2) Personnel Monitoring shall be conducted according to OSHA and NIOSH regulations and guidance.
 - 3) Treatment System Performance Monitoring shall consist of monitoring airborne contaminants to determine if Performance Standards and ARARs are being met. Settling Defendants shall use EPA approved methods to sample and analyze the air. Settling Defendants shall include provisions in the air monitoring plan

for notifying nearby residents, local, state and federal agencies in the event that unacceptable concentrations of airborne toxic constituents are migrating off-site. Settling Defendants shall report detection of unacceptable levels of airborne contaminants to EPA in accordance with Section XI of the Consent Decree.

d. A Spill Control and Countermeasures Plan which shall include the following:

- 1) Contingency measures for potential spills and discharges of oil, or Waste Material as defined in the Consent Decree, as a result of materials handling and/or transportation.
- 2) A description of the methods, means, and facilities required to prevent contamination of soil, water, atmosphere, and uncontaminated structures, equipment, or material by spills or discharges.
- 3) A description of the equipment and personnel necessary to perform emergency measures required to contain any spillage and to remove spilled materials and soils or liquids that become contaminated due to spillage. This collected spill material must be properly disposed of.
- 4) A description of the equipment and personnel to perform decontamination measures that may be required to remove spillage from previously uncontaminated structures, equipment, or material.

5. Construction Health and Safety Plan

Settling Defendants shall prepare a Construction Health and Safety Plan in conformance with Settling Defendants' health and safety program, and in compliance with OSHA regulations and protocols. The Construction Health and Safety Plan shall include a health and safety risk analysis, a description of monitoring and personal protective equipment, medical monitoring, and site control. EPA will not approve the Construction Health and Safety Plan, but rather EPA will review it to ensure that all necessary elements are included, and that the Plan provides for the protection of human health and the environment. Settling Defendants shall include the following items in the Construction Health and Safety Plan:

- a. The name of the person who will be responsible in the event of an emergency incident.
- b. A plan for initial site safety indoctrination and training for all employees, including the name of the person who will give the training and the topics to be covered.
- c. A list of the first aid and medical facilities including, location of first aid kits, names of personnel trained in first aid, a clearly marked map with the route to the nearest medical facility, all necessary emergency phone numbers conspicuously posted at the job site (i.e., fire, rescue, local hazardous material teams, National Emergency Response Team, etc.)
- d. Plans for protection of the public and visitors to the job site.

B. Preconstruction Conference

Settling Defendants shall hold a Preconstruction Conference after selection of the construction contractor, but before initiation of construction. This conference shall include Settling Defendants and federal, state and local government agencies that have a jurisdictional interest, and shall:

1. Define the roles, relationships, and responsibilities of all parties;
2. Review methods for documenting and reporting inspection data;
3. Review methods for distributing and storing documents and reports;
4. Review work area security and safety protocols;
5. Review the Construction Schedule;
6. Conduct a site reconnaissance to verify that the design criteria and the plans specifications are understood and to review material and equipment storage locations.

Settling Defendants must document the names of people in attendance at the Preconstruction Conference, the issues discussed, clarifications made, special instructions issued, etc.

C. Prefinal Construction Inspection

Upon preliminary project completion, Settling Defendants shall notify EPA for the purpose of conducting a Prefinal Construction Inspection. Participants shall include the Project Coordinators, Supervising Contractor, Construction Contractor, and other federal, state, and local agencies with a jurisdictional interest. The Prefinal Inspection shall consist of a walk-through inspection of the entire project site. The objective of the inspection is to determine whether the construction is complete and consistent with the Consent Decree. Any outstanding construction items discovered during the inspection shall be identified and noted on a punch list. Additionally, Settling Defendants shall operationally test the treatment equipment. Settling Defendants shall certify that the equipment has performed to effectively meet the purpose and intent of the specifications. Retesting shall be completed where deficiencies are revealed. Settling Defendants shall submit a Prefinal Construction Inspection Report which outlines the outstanding construction items, actions required to resolve the items, completion date for the items, and an anticipated date for the Final Inspection.

D. Final Construction Inspection

Promptly upon completion of all outstanding construction items, Settling Defendants shall notify EPA for the purpose of conducting a Final Construction Inspection. The Final Construction Inspection shall consist of a walk-through inspection of the entire project site. The Prefinal Construction Inspection Report shall be used as a check list with the Final Construction Inspection focusing on the outstanding construction items identified in the Prefinal Construction Inspection. All tests that were originally unsatisfactory shall be conducted again. Confirmation shall be made during the Final Construction Inspection that all outstanding items have been resolved. Any outstanding construction items discovered during the inspection still requiring correction shall be identified and noted on a punch list. If any items are still unresolved, the inspection shall be considered to be a Prefinal Construction Inspection, requiring another Prefinal Construction Inspection Report and subsequent Final Construction Inspection.

E. Final Construction Report

Thirty (30) days following the conclusion of the Final Construction Inspection, Settling Defendants shall submit the Final Construction Report. The Final Construction Report shall include the following:

1. A brief description of how outstanding items noted in the Prefinal Inspection were resolved;
2. An explanation of modifications made during the RA to the original RD and RA Work Plans and why these changes were made;
3. As-built and record drawings.
4. A synopsis of the construction work defined in the SOW and certification that the construction work has been completed.

F. Remedial Action Report

As provided in Section XV of the Consent Decree, within 90 days after Settling Defendants conclude that the Remedial Action has been fully performed and that the Performance Standards have been attained, Settling Defendants shall so certify to the United States and shall schedule and conduct a pre-certification inspection to be attended by EPA, the Settling Defendants and the State. If after the pre-certification inspection Settling Defendants still believe that the Remedial Action has been fully performed and the Performance Standards have been attained, Settling Defendants shall submit a Remedial Action (RA) Report to EPA and the State in accordance with Section XV of the Consent Decree. The Settling Defendants shall include in the RA Report:

1. A synopsis of the work defined in this SOW and a demonstration in accordance with the Performance Standards Verification Plan that Performance Standards have been achieved;
2. A certification that the Remedial Action has been completed in full satisfaction of the requirements of the Consent Decree, and;
3. A description of how Settling Defendants will operate and maintain the Remedial Action.

As provided in Section XV of the Consent Decree, the Remedial Action shall not be considered complete until EPA approves the RA Report.

4. TASK IV - OPERATION AND MAINTENANCE

Settling Defendants shall perform Operation and Maintenance (O&M) at the Site in accordance with the Operation and Maintenance Plan approved by EPA.

A. Operation and Maintenance Plan

Within three months after EPA approval of the Preliminary Design, Settling Defendants shall submit an Operation and Maintenance Plan for review. The Operation and Maintenance Plan must be reviewed and approved by EPA prior to initiation of Operation and Maintenance activities by Settling Defendants.

Upon approval of the Operation and Maintenance Plan, Settling Defendants shall implement the Operation and Maintenance Plan in accordance with the schedule contained therein. Settling Defendants shall include in the Operation and Maintenance Plan a description of start-up procedures, operation, troubleshooting, training, and evaluation activities that shall be carried out by Settling Defendants. Specifically, the Settling Defendants shall include the following elements in the Operation and Maintenance Plan:

1. Equipment start-up and operator training;
 - a. Technical specifications governing treatment systems;
 - b. Requirements for providing appropriate service visits by experienced personnel to supervise the installation, adjustment, start-up and operation of the systems; and,
 - c. Schedule for training personnel regarding appropriate operational procedures once start up has been successfully completed.
2. Description of normal operation and maintenance;
 - a. Description of tasks required for system operation;
 - b. Description of tasks required for system maintenance;
 - c. Description of prescribed treatment or operating conditions; and
 - d. Schedule showing the required frequency for each O&M task.
3. Description of potential operating problems;
 - a. Description and analysis of potential operating problems;

- b. Sources of information regarding problems; and
 - c. Common remedies or anticipated corrective actions.
- 4. Description of routine monitoring and laboratory testing;
 - a. Description of monitoring tasks;
 - b. Description of required laboratory tests and their interpretation;
 - c. Required QA/QC; and
 - d. Schedule of monitoring frequency and date, if appropriate, when monitoring may cease.
- 5. Description of alternate O&M;
 - a. Should system fail, alternate procedures to prevent undue hazard; and
 - b. Analysis of vulnerability and additional resource requirements should a failure occur.
- 6. Safety Plan;
 - a. Description of precautions to be taken and required health and safety equipment, etc., for site personnel protection, and
 - b. Safety tasks required in the event of systems failure.
- 7. Description of equipment;
 - a. Equipment identification;
 - b. Installation of monitoring components;
 - c. Maintenance of site equipment; and
 - d. Replacement schedule for equipment and installation components.
- 8. Records and reporting;
 - a. Daily operating logs;
 - b. Laboratory records;

- c. Records of operating cost;
- d. Mechanism for reporting emergencies;
- e. Personnel and Maintenance Records; and
- f. Monthly reports to State/Federal Agencies.

B. Operation and Maintenance Manual

Within three (3) months after EPA approval of the Preliminary Design, Settling Defendants shall submit an O&M manual for review. This manual shall include all necessary O&M information for the operating personnel. The O&M manual must be reviewed and approved by EPA prior to initiation of Operation and Maintenance activities.

5. TASK V - PERFORMANCE MONITORING

Settling Defendants shall conduct Performance Monitoring to ensure that all Performance Standards are met.

A. Performance Standards Verification Plan

Settling Defendants shall prepare a Performance Standards Verification Plan to provide a mechanism to ensure that both short-term and long-term Performance Standards for the Remedial Action are met. In drafting the Performance Standards Verification Plan, Settling Defendants shall use the guidances relied on in developing the Sampling and Analysis Plan during the Remedial Design phase. Settling Defendants shall submit the Performance Standards Verification Plan with the Preliminary Design. Once the Performance Standards Verification Plan is approved by EPA, the Settling Defendants shall implement the Performance Standards Verification Plan on the approved schedule. The Settling Defendants shall include in the Performance Standards Verification Plan:

1. A Performance Standards Verification Field Sampling and Analysis Plan providing guidance for all fieldwork by defining in detail the sampling and data gathering methods to be used. The Performance Standards Verification Field Sampling and Analysis Plan shall be written so that a field sampling team unfamiliar with the Site would be able to gather the samples and field information required. See Section IV, Task 1 of this SOW for further description of the requirements of a Sampling and Analysis Plan.
2. A Performance Standards Verification Quality Assurance/Quality Control Plan describing the

quality assurance and quality control protocols which will be followed in demonstrating compliance with Performance standards.

3. A delineation of those tasks Settling Defendants shall perform to demonstrate compliance with the Performance Standards, and a schedule for the performance of those tasks. Settling Defendants shall include in the Performance Standards Verification Plan a thorough discussion of the proposed methodology Settling Defendants shall utilize to verify that the Performance Standards at the Site are being met. Before Settling Defendants can utilize this proposed methodology, EPA must review and approve this methodology. The State shall also have an opportunity to review and comment (comments shall be made to EPA) on the methodology for verifying that all Performance Standards are being met at the Site.

REFERENCES

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the RD/RA process. Settling Defendants shall review these guidances and shall use the information provided therein in performing the RD/RA and preparing all deliverables under this SOW.

1. "National Oil and Hazardous Substances Pollution Contingency Plan, Final Rule", Federal Register 40 C.F.R. Part 300, March 8, 1990.
2. "Superfund Remedial Design and Remedial Action Guidance," U.S. EPA, Office of Emergency and Remedial Response, June 1986, OSWER Directive No. 9355.0-4A.
3. "Interim Final Guidance on Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties," U.S. EPA, Office of Emergency and Remedial Response, February 14, 1990, OSWER Directive No. 9355.5-01.
4. "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final," U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive No. 9355.3-01.
5. "A Compendium of Superfund Field Operations Methods," Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.
6. "EPA NEIC Policies and Procedures Manual," EPA-330/9-78-001-R, May 1978, revised November 1984.
7. "Data Quality Objectives for Remedial Response Activities," U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-7B.
8. "Guidelines and Specifications for Preparing Quality Assurance Project Plans," U.S. EPA, Office of Research and Development, Cincinnati, OH, QAMS-004/80, December 29, 1980.
9. "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans," U.S.

EPA, Office of Emergency and Remedial Response,
QAMS-005/80, December 1980.

10. "Users Guide to the EPA Contract Laboratory Program," U.S. EPA, Sample Management Office, August 1982.
11. "Preparation of a U.S. EPA Region (Field Sampling Plan for Private and State-Lead Superfund Projects," Quality Assurance Management Section, U.S. EPA Region 9, April 1990.
12. "USEPA Contract Laboratory Program Statement of Work for Organics Analysis," U.S. EPA, Office of Emergency and Remedial Response, February 1988.
13. "USEPA Contract Laboratory Program Statement of Work for Inorganics Analysis," U.S. EPA, Office of Emergency and Remedial Response, July 1988.
14. "Quality in the Constructed Project: A Guideline for Owners, Designers, and Constructors, Volume 1, Preliminary Edition for Trial Use and Comment," American Society of Civil Engineers, May 1988.
15. "Interim Guidance on Compliance with Applicable or Relevant and Appropriate Requirements," U.S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.
16. "CERCLA Compliance with Other Laws Manual," Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (Draft), OSWER Directive No. 9234.1-01 and -02.
17. "Guidance on Remedial Actions for Contaminated Groundwater at Superfund Sites," U.S. EPA, Office of Emergency and Remedial Response, (Draft), OSWER Directive No. 9283.1-2.
18. "Guide for Conducting Treatability Studies Under CERCLA," U.S. EPA, Office of Emergency and Remedial Response, Pre-publication Version.
19. "Health and Safety Requirements of Employees Employed in Field Activities," U.S. EPA, Office of Emergency and Remedial Response, July 12, 1981, EPA Order No. 1440.2.
20. "Standard Operating Safety Guides," U.S. EPA, Office of Emergency and Remedial Response, November 1984.

21. "Standards for General Industry," 29 C.F.R. Part 1910, Occupational Health and Safety Administration.
22. "Standards for the Construction Industry," 29 C.F.R. 1926, Occupational Health and Safety Administration.
23. "NIOSH Manual of Analytical Methods," 2d edition. Volumes I - VII, or the 3rd edition, Volumes I and II, National Institute of Occupational Safety and Health.
24. "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," National Institute of Occupational Safety and Health/Occupational Health and Safety Administration/United States Coast Guard/Environmental Protection Agency, October 1985.
25. "TLVs - Threshold Limit Values and Biological Exposure Indices for 1987 - 88," American Conference of Governmental Industrial Hygienists.
26. "American National Standards Practices for Respiratory Protection," American National Standards Institute Z88.2-1980, March 11, 1981.

SCHEDULE OF THE MAJOR DELIVERABLES FOR THE
REMEDIAL DESIGN AND REMEDIAL ACTION AT
THE HASSAYAMPA LANDFILL SUPERFUND SITE

<u>DELIVERABLE*</u>	<u>EPA RESPONSE</u>	<u>DUE DATE</u>
<u>TASK I - PROJECT PLANNING</u>		
Additional Investigation Work Plan	Review and Approve	Consent Decree Lodging
Additional Investigation Sampling and Analysis Plan	Review and Approve	Consent Decree Lodging
Additional Investigation Health and Safety Plan	Review and Comment	Consent Decree Lodging
Additional Investigation Report	Review and Approve	3 months after approval the Additional Investigation Work Plan
Treatability Study Work Plan	Review and Approve	Consent Decree Lodging
Treatability Study Sampling and Analysis Plan	Review and Approve	Consent Decree Lodging
Treatability Study Health and Safety Plan	Review and Comment	Consent Decree Lodging
Treatability Study Report	Review and Approve	3 months after approval of Treatability Study Work Plan

DELIVERABLE*EPA RESPONSEDUE DATETASK II - REMEDIAL DESIGN

RD Work Plan

Review and Approve

Consent Decree Lodging

Preliminary Design

Review and Approve

3 months after EPA
approval of RD Work PlanPrefinal/Final Design
(Review and Comment only on Construction Cost Estimate)

Review and Approve

3 months after EPA
approval of Prel. DesignTASK III - REMEDIAL ACTION

RA Work Plan

Review and Approve

3 months after EPA
approval of RD Work Plan

Project Delivery Strategy

Review and Approve

As scheduled in RA Work
Plan

Construction Management Plan

Review and Approve

" "

Construction QA Plan

Review and Approve

" "

Construction Contingency Plan

Review and Approve

" "

Construction Health and Safety
Plan

Review and Comment

" "

Prefinal Construction
Inspection Report

Review and Approve

" "

Final Construction
Inspection Report

Review and Approve

" "

Remedial Action Report

Review and Approve

" "

DELIVERABLE*

EPA RESPONSE

DUE DATE

TASK IV - OPERATION AND MAINTENANCE

Operation and Maintenance Plan

Review and Approve

3 months after EPA
approval of Prel. Design

Operation and Maintenance
Manual

Review and Approve

3 months after EPA
approval Prel. Design

TASK V - Monitoring

Performance Standard Verification
Plan

Review and Approve

3 months after EPA
approval of RD Work Plan

- * All deliverables identified in this table are draft documents. With the exception of the Preliminary Design Document, all draft documents will be revised, as required by EPA, within thirty days of Settling Defendants' receipt of EPA comments.

NOTE: Three copies of all deliverables shall be submitted to EPA and the Arizona Department of Environmental Quality. The Arizona Department of Environmental Quality shall be afforded an opportunity to review and comment to EPA on the above deliverables.

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**Receipt for
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No Insurance Coverage Provided

Chemical Waste Management

RE: Overley's Pumping

John T. Van Gessel, Esq.

3003 Butterfield Road

Oak Brook, IL 60521

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PS Form 3800, June 1991

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